

NATURAL SCIENCES TRIPOS, PART IA

MICHAELMAS 1999

LENT 2000

EASTER 2000

LEARNING DAY

Committee for the Natural Sciences Tripos Learning Day for first-year students.

This event will give new undergraduates an introduction to 'the Cambridge teaching system', study skills and stress management. The sessions are informal and detailed timetables are available from Senior Tutors.

Wednesday, 6 October 1999: *Chemistry Lecture Theatre 1, Lensfield Road, 2–4.30 p.m.*

BIOLOGY OF CELLS

Course Co-ordinator: Prof. C. M. Bate E-mail: cmb16@cus.cam.ac.uk

All lectures are in the *Babbage Lecture Theatre, on the New Museums site* on M. W. F. 10. Practical work takes place in the *Zoological Laboratory* at 11–1 and 2–4 on M or W or F. For those doing Geology, practical times are 12–1 and 2–5; and for those doing Materials and Mineral Sciences times are 11–12 and 2–5.

DR S. H. P. MADDRELL

The Living Cell (Four lectures)

DR D. J. ELLAR

Macromolecules in the Cell (Five lectures)

DR M. A. TESTER

Membranes: Molecular Superstructures (Five lectures)

DR K. V. BRINDLE

Utilisation of Fuel Molecules (Four lectures)

DR A. G. SMITH

Energy Transduction and Biosynthesis (Six lectures)

DR A. MULLINGER, DR P. E. REYNOLDS AND DR J. DAVIES

Practical work

DR D. K. SUMMERS

Hunting the Gene (Seven lectures)

DR C. J. HOWE

Genes in Action (Six lectures)

DR D. MACDONALD

The Genetic Revolution (Six lectures)

PROF. R. A. LASKEY

Cell Proliferation (Five lectures)

DR D. K. SUMMERS, DR C. J. HOWE AND

DR D. HANKE

Practical work

PROF. C. M. BATE

Development (Six lectures)

DR K. JOHNSTONE

Cell Signalling (Six lectures)

PROF. C. M. BATE AND OTHERS

Practical work: revision and demonstrations

BIOLOGY OF ORGANISMS

Course Co-ordinator: Dr M. Tester E-mail: mat10@cam.ac.uk

All lectures will be given in the Department of Zoology Tu. Th. S. 11

DR W. A. FOSTER

Natural Selection and Animal Diversity (Six lectures)

DR R. S. K. BARNES

Evolution and Animal Diversity (Twelve lectures)

DR R. G. BOUTILIER

Physiological Ecology and Evolution (Six lectures)

DR W. A. FOSTER, DR R. S. K. BARNES AND

DR R. G. BOUTILIER

Practical Work. M. 11–1, 2–4 or Tu. 12–1, 2–5

Department of Zoology

DR D. E. HANKE

Biology of Seed Plants (Sixteen lectures)

DR J. M. DAVIES

Biology of Fungi (Four lectures)

DR J. P. CARR

Plants and their Enemies (Four lectures)

DR M. A. TESTER AND DR J. P. CARR

Practical Work. M. 11–1, 2–4 or Tu. 12–1,
2–5 *Department of Plant Sciences*

DR J. A. BARRETT AND DR P. O'DONALD

Evolution and Genetics (Twelve lectures)

DR J. A. BARRETT

Practical Work. M. 11–1, 2–4 or Tu. 12–1,
2–5 *Department of Plant Sciences*

CHEMISTRY

Course Co-ordinator: Dr J. Keeler E-mail: James.Keeler@ch.cam.ac.uk

All lectures will be given in Lecture Room 1, Department of Chemistry, Lensfield Road on Tu. Th. S. 10

DR P. D. WOTHERS

Shapes and Structures of Molecules (Sixteen lectures)

DR S. BALASUBRAMANIAN

Chemical Reactions (Eight lectures)

Department of Plant Sciences

DR S. BALASUBRAMANIAN

Chemical Reactions (Four lectures, continued)

DR J. H. KEELER

Kinetics of Reactions (Ten lectures)

Energetics and Equilibria (Ten lectures)

DR P. D. WOTHERS

Chemistry of the Elements (Twelve lectures)

Practical Chemistry. M. F. 10–12 or 11–1 and 2–5; Tu. Th. 11–1 and 2–5. Students should register in the *Department of Chemistry, Lensfield Road*, between 8.30 and 12.30 or 2 and 4.30 on Tuesday, 5 Oct. when they will be assigned attendance on the morning and afternoon periods of one particular day in either odd weeks (beginning Th. 7 Oct.) or even weeks (beginning Th. 14 Oct.) of the term

Practical Chemistry
Attendance days as for Michaelmas Term

Practical Chemistry
Attendance days as for Michaelmas Term

NATURAL SCIENCES TRIPOS, PART IA (continued)

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COMPUTING COURSE FOR PHYSICAL SCIENTISTS

Course **A** is intended to be that which is normally taken. Course **B** takes place outside lecture term and is intended for undergraduates reading Biology of Organisms. The two courses will be identical in content.

Course A

DR F. H. KING

Scientific Computing. Tu. S. 11 (Six lectures, beginning 9 Nov.) or Th. S. 11 (Six lectures, beginning 11 Nov.)
Chemical Laboratory, Lensfield Road

DR F. H. KING

Practical work¹. Registration for a total of one hour of formal practical work will take place in the first lecture

DR F. H. KING

Practical work¹

DR F. H. KING

Practical work¹

Course B

DR F. H. KING

Scientific Computing. Th. F. S. 9 (Two and a half days, beginning 2 Dec.) *Old Music School (Lower classroom), Downing Place*

DR F. H. KING

Practical work¹. This will be included in the three-day period

DR F. H. KING

Practical work¹

DR F. H. KING

Practical work¹

¹ The computing facilities used for practical work will be available for informal use throughout the year.

ELEMENTARY MATHEMATICS FOR BIOLOGISTS

All lectures and examples classes will take place in the Hopkinson Lecture Room, New Museums Site

DR F. H. KING AND MR J. J. TRAPP

Mathematics and the Use of Mathcad*. M. W. F. 9

MRS E. M. ALDWORTH

Biometry. M. W. F. 9 (Sixteen lectures)

DR R. D. H. WALKER

Elementary Calculus. M. W. F. 9

(Six lectures, beginning 28 Feb.)

DR F. H. KING AND MISS C. H. NORTHEAST

Assessed Computing Exercise. M. 9

(One class, 13 Mar.) *The Old Music School*

MR J. J. TRAPP

Modelling in Biology. M. W. F. 9

Examples Class. Th. 2 (beginning 21 Oct.)

Examples Class. Th. 2 (beginning 20 Jan.)

Examples Class. Th. 2
(beginning 27 Apr.)

Elementary Mathematics for Biologists is intended for students who do not have A-level Mathematics whereas Quantitative Biology caters for students with A-level Mathematics. It is to be noted that NEITHER course provides a qualification for offering Mathematics together with only one other subject in Part Ib of the Natural Sciences Tripos.

Throughout the year selected lectures will be replaced by computing practical classes. These classes will take place in the Old Music School. Further details will be issued in lectures.

* Associated with this course there will be an assessed computing exercise which will be taken into account by the Examiners. The assessments will take place on 13 March as shown.

GEOLOGY

Course Co-ordinator: Dr A. G. Smith E-mail: ags1@esc.cam.ac.uk

All lectures are given in the Physiology Lecture Room, adjacent to the Department of Earth Sciences, on M. W. F. 11

DR J. A. JACKSON, DR S. GIBSON AND DR A. G. SMITH

Earth as a planet and volcanic processes
(Twenty-four lectures)

DR N. J. BUTTERFIELD

Palaeobiology (Eleven lectures)

DR N. HOVIUS

Earth Surface Processes and Sediments
(Twelve lectures)

DR P. F. FRIEND

Introduction to Geology of Arran
(One lecture)

Field Course in Arran

Party A. 16–24 Mar.

Party B. 23–31 Mar.

Party C. 30 Mar.–7 Apr.

Practical work: There are three one-hour practicals to be taken per week: one during the periods Tu. 10–1, W. 9–1, one during Th. 10–1, W. 9–1, and the third during S. 10–11, M. 9–1. Students must register for practical classes in the Department of Earth Sciences on Monday, 4 or Tuesday, 5 October between 9.30 and 1 or 2.30 and 5.

Long Vacation Course: A course on Geological Field Methods will be given 26 June–6 July 2000 for students intending to take a geological subject.

NATURAL SCIENCES TRIPOS, PART IA (continued)

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MATERIALS AND MINERAL SCIENCES

Course Co-ordinator: Dr S. A. T. Redfern E-mail: Part IA@msm.cam.ac.uk

This course is offered jointly by the Department of Materials Science and Metallurgy and the Department of Earth Sciences.

All lectures are held in the Babbage Lecture Theatre on M. W. F. 12

DR S. A. T. REDFERN

Structure of Materials (Twelve lectures)

DR D. M. KNOWLES

Mechanical Behaviour (Twelve lectures)

DR D. C. PYLE

Phase Equilibria (Seven lectures)

DR J. A. LITTLE

Diffraction and Imaging (Eleven lectures)

DR I. FARNAN

Anisotropic Properties (Six lectures)

Annual Materials and Minerals Lecture

A public lecture on advances in Materials and Mineral Sciences. Th. 5 (16 Mar.)

Babbage Lecture Theatre

PROF. E. K. H. SALJE

Solid-State Phase Transitions (Five lectures)

DR A. L. GREER

Materials in Practice (Seven lectures)

Practical work: Two two-hour periods each week, one to be taken on M. 2–4, Tu, 11–1, W. 10–12 or W. 2–4; and the other on Th. 11–1, F. 10–12, F. 2–4 or M. 10–12, starting Thursday, 7 October at 11 a.m.Students should register for practical work at the *Laboratory 201, Department of Materials Science and Metallurgy* between 9.30 and 12.30 or 2.30 and 4.30 on Tuesday, 5 October or Wednesday 6 October.**Note:** Students are advised to leave *one* or other of the periods Tu. 11–1 and Th. 11–1 available for the Computing Course for Physical Scientists (see above).

MATHEMATICS*

*All lectures given for this course will start at 9 a.m. promptly***Course A**

DR J. PERRY

Mathematics I. Tu. Th. S. 9 *Physiological Laboratory*Examples class. W. 4.30–6 (Two classes, 10, 24 Nov.)
*Arts School, Room A***Course A**

DR P. H. HAYNES

Mathematics II. Tu. Th. S. 9 (Sixteen lectures, ending 24 Feb.)

Physiological Laboratory

Examples Class. W. 4.30–6 (Two classes, 9, 23 Feb.)

DR F. H. KING

Computing Techniques and Applications**. Tu. Th. S. 9 (Six lectures, beginning 26 Feb.)
*Chemical Laboratory***Course A**

DR A. J. MACFARLANE

Mathematics III. Tu. Th. S. 9

*Physiological Laboratory***Course B**

DR A. T. WINTER

Mathematics I. Tu. Th. S. 9 *Chemical Laboratory*Examples class. W. 4.30–6 (Four classes, 20 Oct., 3, 17 Nov., 1 Dec.) *Arts School, Room A***Course B**

PROF. N. MANTON

Mathematics II. Tu. Th. S. 9 (Sixteen lectures, ending 24 Feb.) *Chemical Laboratory*Examples Class. W. 4.30–6 (Two classes, 16 Feb., 1 Mar.) *Arts School, Room A*

DR F. H. KING

Computing Techniques and Applications**. Tu. Th. S. 9 (Six lectures, beginning 26 Feb.)
*Chemical Laboratory***Course B**

DR A. BURGESS

Mathematics III. Tu. Th. S. 9
Chemical Laboratory

* It is strongly recommended that everyone attending this course should attend at least the first lecture of the Computing Course for Physical Scientists given in the Michaelmas Term (see p. 162).

** Associated with this course there will be an assessed exercise which will be taken into account by the Examiners. The assessments will take place in the afternoons of 8, 9 and 10 May 2000 in the Foyer of the *Babbage Lecture Theatre*. Further details will be issued during the course.

NATURAL SCIENCES TRIPOS, PART IA (continued)

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PHYSICS

*All lectures are on M. W. F. at 9**Course A is given in the Cockcroft Lecture Theatre, New Museums Site.**Course B is given in the Chemical Laboratory, Lensfield Road.**Laboratory Work, course P, takes place at the Cavendish Laboratory (West Cambridge).*

The Year Group Co-ordinator is Dr G. A. C. Jones E-mail: IA-physics@phy.cam.ac.uk

Courses **A** and **B** are alternatives which cover the same syllabus. Those intending to continue with physics in later years can attend either course without disadvantage. Course **A** is designed for students who took single-subject mathematics at A-level. Students are recommended to attend course **PC** 'Computing for Physical Scientists' unless they are already familiar with spreadsheets and computer-aided algebra.

All students must attend an introductory talk and register for laboratory course **P** at 11.30 on Wednesday 6 October at the *Cavendish Laboratory*.

Laboratory work is continuously assessed. The Laboratory may be approached by the Madingley Road, or via the Coton cycle and footpath. For cyclists and pedestrians the latter is strongly recommended.

Course A

PROF. M. S. LONGAIR

Foundations of Classical and Statistical Physics

DR V. GIBSON

Oscillations and Waves (first twelve lectures)

DR D. A. GREEN

Fields, Relativity and Quantum Physics (last twelve lectures)

The same continued

Course B

DR J. R. WALDRAM

Foundations of Classical and Statistical Physics

DR J. R. BATLEY

Oscillations and Waves (first twelve lectures)

DR J. R. CARTER

Fields, Relativity and Quantum Physics (last twelve lectures)

The same continued

Course P

DR T. O. WHITE AND OTHERS

Experimental Physics. M. or Tu. or Th. or F. 2-6.

Students attend one afternoon every fortnight

DR G. A. C. JONES AND OTHERS

The same continued

PROF. G. G. LONZARICH AND OTHERS

The same continued

Course PC

Computing for Physical Scientists (see p. 162).

PHYSIOLOGY

Course Organiser: Dr H. P. C. Robinson E-mail: hpcr@cus.cam.ac.uk

Lectures. Tu. Th. S. 12 *Anatomy Lecture Theatre*

PROF. R. C. THOMAS

Introduction to Physiology (One lecture, 7 Oct.)

Physiology of Nerve Cells (Seven lectures, 9-23 Oct.)

DR H. P. C. ROBINSON

Physiology of muscle (Six lectures, 26 Oct.-6 Nov.)

DR C. J. SCHWIENING AND DR D. A. GIUSSANI

Cardiovascular system and autonomic nervous system (Ten lectures, 9-30 Nov.)

Practical Work

Experimental physiology. W. or F. 2-4 (5) The first two weeks, Experimental classes will last for three hours

Histology. W. or F. 11-1 (and W. 2-4 for those also reading Materials and Mineral Sciences)

Lectures. Tu. Th. S. 12 *Anatomy Lecture Theatre*

DR M. J. MASON

Breathing and blood gases (Eight lectures, 20 Jan.-5 Feb.)

DR S. O. SAGE

Renal physiology and body fluid homeostasis (Ten lectures, 8-29 Feb.)

DR R. L. TAPP

Digestion (Six lectures, 2-14 Mar.)

Practical Work

The same continued

Lectures. Tu. Th. 12 *Anatomy Lecture Theatre*

DR R. I. WOODS

Temperature regulation and the control of body weight (Three lectures, 27 Apr.-4 May)

DR R. J. BARNES

Integrated physiological responses to environmental challenges (Four lectures, 9-18 May)

Practical Work

The same continued

NATURAL SCIENCES TRIPOS, PART IA (continued)

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QUANTITATIVE BIOLOGY

Lectures will be held in the *Large Lecture Theatre, Department of Plant Sciences*, Computer practicals in the *Old Music School*, Examples classes in the *Arts School, Room B*.

Course Organiser: Dr C. A. Gilligan E-mail: cag1@cam.ac.uk

Lectures. Tu. Th. S. 9

DR C. A. GILLIGAN

Introduction to Quantitative Biology (Three lectures)
Growth and decline of populations (Twelve lectures)

DR J. A. BARRETT AND DR W. AMOS

Comparison of populations (Nine lectures)

Examples classes and Computer practicals

DR C. A. GILLIGAN, DR J. A. BARRETT AND OTHERS
Th. 2–3.30 or 3.30–5

Lectures. Tu. Th. S. 9

MR J. J. TRAPP

Introduction to modelling of interacting populations (Eight lectures)

DR B. T. GRENFELL

Interacting populations: ecological applications (Six lectures)

MRS E. ALDWORTH

Interacting populations: biochemical and physiological applications (Six lectures)

Miscellaneous statistical methods (Four lectures)

Examples classes and Computer practicals

MR J. J. TRAPP, DR B. T. GRENFELL AND
MRS E. ALDWORTH
Th. 2–3.30 or 3.30–5

Lectures. Tu. Th. S. 9

DR R. A. JOHNSTONE

Physiological modelling (Eight lectures)

DR C. A. GILLIGAN, MR J. J. TRAPP,

DR B. T. GRENFELL AND

MRS E. ALDWORTH

Synthesis and revision (Four lectures)

Examples classes and Computer practicals

DR R. A. JOHNSTONE
Th. 2–3.30 or 3.30–5

Note: Quantitative Biology is intended for those students who have studied Mathematics at 'A' level. It is to be noted that Quantitative Biology does not provide a qualification for offering Mathematics with only one other subject on Part IB of the Natural Sciences Tripos.

NATURAL SCIENCES TRIPOS, PART IB

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EASTER 2000

ADVANCED PHYSICS

Lectures are given in the Cockcroft Lecture Theatre, New Museums Site, unless otherwise stated.

Laboratory Work, course R, takes place at the Cavendish Laboratory (West Cambridge).

The Year Group Co-ordinator Dr S. F. Gull E-mail: IB-advanced-physics@phy.cam.ac.uk

Of the courses listed below, F and G are not examinable in Part IB.

Although others may attend, course F is mainly for those expecting to proceed to Part II Experimental and Theoretical Physics and taking Mathematics (p. 170) in addition to Advanced Physics. An understanding of the content of this course will be assumed in discussion of the more theoretical topics in Parts II and III.

Course G is intended for students who are *not* taking Mathematics.

All students must attend an introductory talk and register for laboratory course R at 2.30 on Wednesday 6 October at the *Cavendish Laboratory*.

Classes are open at the hours listed below. Students are expected to attend for a period of not less than six hours each week. Those who are offering two other experimental sciences besides Advanced Physics may experience some difficulty in meeting this requirement and, if so, should consult Dr R. D. E. Saunders at the *Cavendish Laboratory*; special arrangements will be made in such cases.

Laboratory work is continuously assessed.

Course D

DR D. J. C. MACKAY

Dynamics. Tu. S. 9

DR R. D. E. SAUNDERS

Experimental Methods. Th. 9

DR J. M. RILEY

Waves. M. W. F. 12 (first twelve lectures)

DR S. F. GULL

Electromagnetism. M. W. F. 12 (last twelve lectures)

DR H. P. HUGHES

Optics. Tu. Th. S. 9 (first twelve lectures)

DR M. C. PAYNE

Quantum Mechanics I. Tu. Th. S. 9
(last twelve lectures)

The same continued. Tu. Th. S. 9

DR S. F. GULL

Electromagnetism. M. W. F. 12
(first twelve lectures)

PROF. A. HOWIE

Thermal Physics. M. W. F. 12
(last twelve lectures)

PROF. R. H. FRIEND

Condensed Matter Physics. M. W. F. 12

Course F

PROF. P. B. LITTLEWOOD AND OTHERS

Examples Class in Mathematical Physics. W. 2.15–4.15

(Two classes, 17 Nov., 1 Dec.) Room A,

Arts School, Bene't Street

This class interleaves with the Mathematics examples class

PROF. P. B. LITTLEWOOD AND OTHERS

The same continued. (Seven classes, beginning 26 Jan.)

The same continued. (One class, 10 May)

Course G

DR D. A. GREEN

Mathematical Concepts in Physics. M. W. F. 11

(first sixteen lectures) Room A, Arts School,

Bene't Street

Course R

DR R. D. E. SAUNDERS AND OTHERS

Systems and Measurement. Tu. or Th. 10–6 or F. and

M. 2–6

DR R. J. BUTCHER AND OTHERS

Physics of Waves. Tu. or Th. 10–6 or F. and

M. 2–6

ANIMAL BIOLOGY¹

Course Organiser: Dr B. J. McCabe E-mail: b.j.mccabe@zoo.cam.ac.uk

Lectures will take place at the Department of Zoology unless otherwise stated, M. W. F. 11

Behaviour and Ecology

PROF. N. B. DAVIES AND PROF. P. P. G. BATESON

(Twelve lectures, beginning 8 Oct.)

Brains and Behaviour

DR S. B. LAUGHLIN AND PROF. M. BURROWS (Twelve lectures,

beginning 5 Nov.)

Adaptation and Evolution

DR S. H. P. MADDRELL AND DR W. A. FOSTER

Insects (Twelve lectures, beginning 21 Jan.)

DR J. A. CLACK AND DR A. E. FRIDAY

Vertebrates (Twelve lectures, beginning 18 Feb.)

Environmental Physiology

DR S. H. P. MADDRELL AND DR R. BOUTILIER

(Twelve lectures, beginning W. 26 Apr.)

Note the early start of this course

Students will be expected to do four hours practical work per week between 12 and 5 on Wednesdays or 11 and 5 on Thursdays.

¹ Candidates who intend to read Part II Zoology and who have not taken Biology of Organisms are recommended to attend one of the Easter Vacation Field Courses. Details are posted in the Laboratory.

NATURAL SCIENCES TRIPOS, PART 1B (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

BIOCHEMISTRY AND MOLECULAR BIOLOGY

Course Co-ordinator: Dr T. R. Hesketh E-mail: trh12@mole.bio.cam.ac.uk

Lectures are given in the lecture theatre of the Department of Biochemistry, Old Addenbrooke's Site building, 80 Tennis Court Road. M. W. F. 10; Practicals at the Department of Biochemistry, Downing Site building.

Genes and proteins: macromolecules in action

DR C. J. HOWE

Gene cloning and manipulation. Genetic engineering (Five lectures, 8–18 Oct.)

PROF. J. O. THOMAS

Control of gene expression: DNA structure and DNA-protein interactions (Five lectures, 20–29 Oct.)

DR C. W. J. SMITH

Control of gene expression: transcription, RNA processing and translation (Five lectures, 1–10 Nov.)

PROF. SIR TOM BLUNDELL AND PROF. R. N. PERHAM

Proteins, enzymes and protein engineering (Ten lectures, 12 Nov.–3 Dec.)

Energy transduction, cell signalling and cell proliferation

DR G. C. BROWN

Energy transduction in bacteria, mitochondria and chloroplasts (Six lectures, 19–31 Jan.)

DR K. M. BRINDLE

Control of metabolism (Six lectures, 2–14 Feb.)

DR R. W. FARNDALE

Transmembrane signalling: molecules and mechanisms (Six lectures, 16–28 Feb.)

DR D. M. CARRINGTON

Control of eukaryotic cell growth (Four lectures, 1–8 Mar.)

DR T. R. HESKETH

Oncogenes, tumour suppressor genes, and cancer (Four lectures, 10–17 Mar.)

Biochemistry of prokaryotes

PROF. G. P. C. SALMOND AND COLLEAGUES

Biochemistry of prokaryotes (Nine lectures, 26 Apr.–15 May)

Note that some lectures begin earlier in Term, and end later in Term, than is usual. This is to allow more time between the end of the course and the examinations. Dr Hesketh will introduce the course as part of the first lecture on Friday 8 Oct.

Practical work will take place in the *Department of Biochemistry, Downing Site building*: four hours from 11 on Mondays or Tuesdays or Wednesdays or Thursdays or Fridays.

CHEMISTRY A

Course Co-ordinator: Dr J. Keeler E-mail: James.Keeler@ch.cam.ac.uk

All lectures will be given in Lecture Room 2, Department of Chemistry, Lensfield Road, on Tu. Th. S. 12 unless indicated

PROF. N. C. HANDY

Quantum Mechanics (Twelve lectures)

DR R. D. AMOS AND DR A. BRIDGEMAN

Symmetry and Bonding (Twelve lectures)

DR R. D. AMOS

Mathematics for Chemists (first three weeks). M. F. 9 (non examinable course for those not attending IB Mathematics for Natural Sciences)

Practical Chemistry. M. Tu. W. Th. F. 1.45–5 Students must register in the *Department of Chemistry, Lensfield Road*, between 9 and 1 or 2 and 4 on Tuesday, 5 October, when they will be assigned attendance in the afternoon of a particular day of the week for Chemistry A. All students must attend an introductory talk concerning the Chemistry A practical course on Wednesday, 6 October at 10.45 a.m. in *Lecture Theatre 1*

DR J. H. KEELER

Molecular Energy Levels and Thermodynamics (Twelve lectures)

PROF. D. A. KING

Solids and Surfaces (Twelve lectures)

Practical Chemistry. Attendance days as for Michaelmas Term

DR J. A. PYLE AND DR S. E. JACKSON

Reactivity and Solutions (Twelve lectures)

CHEMISTRY B

Course Co-ordinator: Dr J. Keeler E-mail: James.Keeler@ch.cam.ac.uk

All lectures given in Lecture Room 2, Department of Chemistry, Lensfield Road, on Tu. Th. S. 9 unless indicated

DR S. G. WARREN

Key Organic Reactions (Twelve lectures)

PROF. I. FLEMING AND DR J. M. RAWSON

Molecules-Structures and Spectra (Twelve lectures)

Practical Chemistry. M. Tu. W. Th. F. 1.45–6 Students must register in the *Department of Chemistry, Lensfield Road* between 9 and 1 or 2 and 4 on Tuesday, 5 October, when they will be assigned attendance in the afternoon of a particular day of the week for Chemistry B.

DR I. PATERSON

Shape and Organic Reactivity (Twelve lectures)

PROF. B. F. G. JOHNSON AND DR R. SNAITH

Chemistry of the Metallic Elements (Twelve lectures)

Practical Chemistry. Attendance days as for Michaelmas Term

DR W. JONES AND DR J. P. ATTFIELD

Chemistry beyond Molecules (Twelve lectures)

NATURAL SCIENCES TRIPOS, PART 1b (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

ECOLOGY

Course Co-ordinator: Dr E. V. J. Tanner E-mail: evt1@mole.bio.cam.ac.uk

All lectures will take place in the Department of Zoology, on M. W. F. 9

DR E. V. J. TANNER
Introduction to the course (One lecture)

DR R. S. K. BARNES
The marine ecosystem (Six lectures)

DR L. E. FRIDAY
Freshwater communities (Five lectures)

DR E. V. J. TANNER
World climates and vegetation; climate change
(Four lectures)

DR P. J. GRUBB
European vegetation and soils; pre-industrial human
impacts (Four lectures)

DR M. A. TESTER
Impacts of rising CO₂ and other pollutants
(Four lectures)

PROF. N. B. DAVIES
Predators and prey (Six lectures)

PROF. T. H. CLUTTON-BROCK
Evolution of social behaviour (Six lectures)

DR R. JOHNSTONE
Ecological genetics (Six lectures)

DR B. GRENFELL
Ecological dynamics (Six lectures)

DR E. V. J. TANNER
Biodiversity (Six lectures) (The above
lectures will start W. 26 Apr.) *Note the
early start of this course*

DR A. BALMFORD
Humans and ecology (Six lectures)

EXPERIMENTAL PSYCHOLOGY

Course Organiser: Dr J. Russell E-mail: j.russell@psychol.cam.ac.uk

Lectures will be held in Lecture Theatre 3, Department of Physiology, Practical work in the Psychological Laboratory unless otherwise stated

PROF. B. C. J. MOORE, DR M. ELMER, PROF. J. D. MOLLON AND
DR H. E. MOSS
Human Experimental Psychology: Perception; Memory;
Action; Psycholinguistics (Twenty-four lectures,
7 Oct.–30 Nov.). Tu. Th. S. 11

DR A. DICKINSON
Learning and memory (Nine lectures,
20 Jan.–8 Feb.). Tu. Th. S. 11

DR R. A. MCCARTHY
Neuropsychology (Three lectures, 10, 12,
15 Feb.). Tu. Th. S. 11

DR K. C. PLAISTED
Developmental Psychology (Six lectures,
17–29 Feb.). Tu. Th. S. 11

PROF. N. J. MACKINTOSH
Intelligence (Three lectures, 2, 4, 7 Mar.).
Tu. Th. S. 11

DR K. C. PLAISTED
Reasoning (Three lectures, 9, 11,
14 Mar.). Tu. Th. S. 11

DR S. BARON-COHEN
Abnormal Psychology (Six lectures,
27 Apr.–9 May). Tu. Th. S. 11

Practical Work. Tu. 9–11 *or* W. 10–12 *or* 2–4 and Th. 2–4
or F. 10–12 *or* 2–4
Two 2-hour sessions per week, one chosen from Tu. 9–11
or W. 10–12 *or* 2–4, and the other from Th. 2–4 *or*
F. 10–12 *or* 2–4

Practical Work. The same continued

Practical Work. The same continued

FLUID MECHANICS

*Lectures will be held in the Department of Chemical Engineering, Pembroke Street
(A detailed timetable will be displayed in the Department)*

Teaching Co-ordinator: Dr D. M. Scott E-mail: Triplos@cheng.cam.ac.uk

Fluid Mechanics
DR D. M. SCOTT
(Twenty-four lectures) M. W. F. 11

Transport Processes
DR A. N. HAYHURST
(Twenty lectures) M. W. F. 11

Continuous Contacting Processes
DR R. B. THORPE
(Four lectures) M. W. F. 11

Continuous Contacting Processes (continued)
DR R. B. THORPE
(Four lectures) M. W. F. 11

Reactors
DR H. A. CHASE
(Eight lectures) M. W. F. 11

Examples Classes
M. 9–11 *or* W. 9–11

Examples Classes
M. 9–11 *or* W. 9–11

Examples Classes
M. 9–11 *or* W. 9–11

Practical Work
M. 9–11 *or* W. 9–11 *or* M. 2–4

Practical Work
M. 9–11 *or* W. 9–11 *or* M. 2–4

Students should register for practical work on Tuesday 5 October, between 2 and 4 p.m. at the *Department of Chemical Engineering*.

NATURAL SCIENCES TRIPOS, PART 1B (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

GEOLOGICAL SCIENCES A

Course Co-ordinator: Dr J. A. D. Dickson E-mail: jadd1@esc.cam.ac.uk

All lectures are in the Tilley Lecture Room, Department of Earth Sciences on M. W. F. 10

DR N. H. WOODCOCK
Maps and Structures (Ten lectures)
PROF. R. S. WHITE
Tectonics and Seismology (Eight lectures)
DR R. JAMES
Evolution of the Hydrosphere (Six lectures)

DR J. A. DICKSON
Biogenic and Chemical Sediments
(Eight lectures)
DR P. F. FRIEND
Classic, Sedimentology (Eight lectures)
DR J. N. BUTTERFIELD
Palaeontology (Eight lectures)

Geological Sciences Field Class.
(20 Mar.–1 Apr.)

DR D. B. NORMAN
Vertebrate palaeontology (Five lectures)
DR N. J. WHITE
Sedimentary Basins Reviewed (Five lectures)

Practical Work. There are three practicals per week of about 1½ hours, to be taken between successive lectures. Students should go to the *Department of Earth Sciences* on Wednesday, 6 October, between 9.30 and 12.30, or 2.30 and 4.30, to register their choice of times from those available, which are M. W. F. 11–1, 2–4; Tu. Th. S. 10–1.

GEOLOGICAL SCIENCES B

Course Co-ordinator: Dr D. M. Pyle E-mail: dmp11@esc.cam.ac.uk

All lectures are held in the Tilley Lecture Room, Department of Earth Sciences on Tu. Th. S. 9

DR A. H. SHEN
Igneous Mineralogy (Twelve lectures)
DR A. SCHULTZ
Origin of the Earth and the Elements (Six lectures)
DR D. M. PYLE
Introductory Igneous Petrology (Six lectures)

DR D. M. PYLE
Magmatic Settings (Six lectures)
DR M. B. HOLNESS
Introduction to metamorphism (Four lectures)
DR T. J. B. HOLLAND
Metamorphism and Metamorphic Case
Studies (Six lectures)
DR M. J. BICKLE
Active tectonics and metamorphism
(Eight lectures)
Geological Sciences Field Class
(20 Mar.–1 Apr.)

DR M. B. HOLNESS
Metamorphism Case Studies (Five lectures)
DR S. GIBSON
Igneous case studies (Five lectures)

Practical Work. There are three practicals per week of about 1½ hours, to be taken between successive lectures. Students should go to the *Department of Earth Sciences* on Wednesday, 6 October, between 9.30 and 12.30, or 2.30 and 4.30, to register their choice of times from those available, which are M. W. F. 11–1, Tu. Th. S. 10–12, M. Tu. Th. 2–4.

HISTORY AND PHILOSOPHY OF SCIENCE

All lectures will be delivered in the Rayleigh Lecture Theatre, Free School Lane

DR W. CLARK
Natural Philosophy. M. 5 (weeks 1–8); W. 5 (weeks 1–4)
PROF. P. LIPTON
Philosophy of Science. F. 5 (weeks 1–8); W. 5
(weeks 5–8)

DR J. SECORD, DR J. FORRESTER AND
DR N. HOPWOOD
History of Science and Medicine. M. 5
(weeks 1–8); W. 5 (weeks 1–4)
The same continued. F. 5 (weeks 1–8)
DR K. RIDDERBOS
Philosophy of Physics. W. 5 (weeks 5–8)

DR M. KUSCH
Sociology of Scientific Knowledge. M. 5
(weeks 1–4)
DR R. JENNINGS
Ethics in Science. F. 5 (weeks 1–4)
DR N. HOPWOOD AND DR J. SECORD
History of Science and Medicine. W. 5
(weeks 1–4)

NATURAL SCIENCES TRIPOS, PART IB (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

MATERIALS SCIENCE AND METALLURGY

Course Co-ordinator: Dr G. T. Burstein E-mail: Part IB@msm.cam.ac.uk

DR H. K. D. H. BHADSHIA Metals and Alloys (Twelve lectures) DR G. T. BURSTEIN Environmental Behaviour of Materials (Twelve lectures)	DR I. M. HUTCHINGS Polymers (Nine lectures) DR R. V. KUMAR Ceramics and Ionic Solids (Six lectures) DR P. D. BRISTOWE Electrical and Magnetic Properties of Materials (Nine lectures)	DR E. R. WALLACH Mechanical Behaviour of Materials (Ten lectures)
Practical Work Either Tu. 2-4 or Th. 2-4 or F. 9-11 and one further hour each week between 9-12.45 or 2-4 on any weekday	The same continued	The same continued

Students should register for practical classes in the *Department of Materials Science and Metallurgy* between 9.30 a.m. and 12.30 p.m. or 2.30 and 4.30 p.m. on Tuesday, 5 October or Wednesday 6 October.

Industrial Visits Details to be announced	The same continued
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MATHEMATICS

DR M. R. E. PROCTOR Mathematical Methods I. M. W. F. 11 <i>Chemical Laboratory</i>	DR R. E. HUNT Mathematical Methods II. M. W. F. 11 <i>Chemical Laboratory</i>	DR H. OSBORN Mathematical Methods III. M. W. F. 11 (Ten lectures) <i>Chemical Laboratory</i>
Examples Class* . W. 2.15-4.15 (Two classes, 10, 24 Nov.) <i>Arts School Room A</i>	Examples Class. W. 2.15-4.15 (8, 15 Mar.) <i>Arts School Room A</i>	Examples Class. W. 2.15-4.15 (Two classes, 26 Apr., 11 May) <i>Arts School Room A</i>

* This Examples Class interleaves with the Examples Class in Mathematical Physics, Advanced Course F, (p. 166).
Optional weekly sessions of practical work with a computer will be available at times to be arranged.

MINERAL SCIENCES

Course Co-ordinator: Dr I. Farnan E-mail: i.farnan@esc.cam.ac.uk

Lectures will be given in the New Seminar Room, Department of Earth Sciences, on M. W. F. 9

DR M. WELCH Degrees of Order in Solids (Fourteen lectures) DR I. FARNAN Transport Properties of Minerals (Ten lectures)	DR M. A. CARPENTER Symmetry and Physical Properties (Ten lectures) DR S. A. T. REDFERN Ferroelectric Phase Transitions in oxides and Ceramics (Six lectures) DR M. T. DOVE Stability of Crystal Structures (Eight lectures)	DR A. SHEN, DR I. FARNAN, DR M. T. DOVE, DR S. A. T. REDFERN AND DR M. A. CARPENTER Minerals and the Natural Environment (Nine lectures)
Practical Work. M. F. 10-12 or 2-4		

Students should register for practical work in the *Department of Earth Sciences* (South Entrance) between 9.30 a.m. and 1 p.m. or between 2.30 and 5 p.m. on Wednesday, 7 October.

NATURAL SCIENCES TRIPOS, PART 1B (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

MOLECULAR CELL BIOLOGY

Course Co-ordinator: Dr D. MacDonald E-mail: d.macdonald@gen.cam.ac.uk

*Lectures will be held in the Biffen Lecture Theatre, Department of Genetics, Tu. Th. S. 10***Molecular Biology of the Cell Nucleus**

PROF. R. A. LASKEY
(Six lectures, 7–19 Oct.)
DR M. TAYLOR
(Three lectures, 21–26 Oct.)

Gene Control and recombination in prokaryotes

DR P. OLIVER
(Three lectures, 28 Oct.–2 Nov.)
DR D. SUMMERS
(Three lectures, 4–9 Nov.)

Genome Structure and change

DR C. O'KANE
(Five lectures, 11–20 Nov.)

Genetic analysis of cellular processes

DR D. MACDONALD
(Four lectures, 23–30 Nov.)

Organelle Biogenesis

DR R. MOULD
(Six lectures, 18–29 Jan.)

Cytoskeleton

DR D. BRAY
(Four lectures, 1–8 Feb.)

Membrane Traffic

DR P. DUPREE
(Four lectures, 10–17 Feb.)

Intracellular Communication

DR K. JOHNSTONE
(Two lectures, 19–22 Feb.)
DR S. LAUGHLIN
(Two lectures, 24–26 Feb.)

Development I

PROF. C. M. BATE
(Four lectures, 29 Feb.–7 Mar.)

Development II

PROF. J. B. GURDON
(Four lectures, 9–16 Mar.)

PROF. M. AKAM
(Four lectures, 25 Apr.–2 May)
DR D. E. HANKE
(Six lectures, 4–16 May)

Practical work will take place in the *Department of Zoology*. Students will be expected to do four hours practical work per week between 11 a.m. and 1 p.m., 2 and 5 p.m. on Tuesday or Fridays.

PATHOLOGY

Course Organiser: Dr B. Kingston E-mail: ibk@mole.bio.cam.ac.uk

Lectures. M. W. F. 12 *Chemical Laboratory Lecture Theatre*

PROF. A. H. WYLLIE
Introduction
Cell Injury and Inflammation (Two lectures, 8–11 Oct.)
DR Y. W. LOKE
Mechanisms of Acute Inflammation
Healing
Persistent Inflammation (Three lectures, 13–18 Oct.)
DR N. HOLMES
The Immune System: Organs and Cells
B Cells and Antibodies
The Major Histocompatibility Complex
T Cells
Cellular Interactions: Cytokines
The Complement System
Tolerance
Autoimmunity
Hypersensitivity and Chronic Inflammation
(Nine lectures, 20 Oct.–8 Nov.)
DR Y. W. LOKE
Transplantation. Blood Groups (One lecture, 10 Nov.)
DR N. HOLMES
Immunity and Immunisation (One lecture, 12 Nov.)
PROF. A. C. MINSON
The Structure and Replication of Viruses
Effects on the Host Cell
Acute Virus Infection
The Response to Infection
Persistent and Latent Infection
Mechanisms of Viral Pathogenesis
Control of Virus Infection
Prions and Transmissible Spongiform Encephalopathies
(Eight lectures, 15 Nov.–1 Dec.)

Lectures. M. W. F. 12 *Chemical Laboratory Lecture Theatre*

DR R. W. LE PAGE
Bacterial Agents of Infectious Disease
Bacterial Cells and Populations
Transmission of Bacterial Infections
Bacterial Pathogenicity: Concepts
Bacterial Diseases: Mechanisms of Pathogenicity I
Bacterial Diseases: Mechanisms of Pathogenicity II
Bacterial Diseases: Mechanisms of Pathogenicity III
Combating Bacterial Diseases (Eight lectures, 19 Jan.–4 Feb.)
DR N. COLEMAN
Tuberculosis. Granulomatous Disease
(One lecture, 7 Feb.)
DR D. DUNNE
Introduction to Parasite Infections
Host-Parasite Interactions: Metazoan Parasite Diseases
Protozoan Parasite Diseases (Four lectures, 9–16 Feb.)
DR N. COLEMAN
Disorders of Red Blood Cells
Thrombosis and Embolism
Arterial Disease
Heart Failure and Hypertension
Ischaemia and Infarction (Five lectures, 18–28 Feb.)
DR M. ARENDS
Principles of Growth
Dysregulation
Nomenclature and Behaviour of Neoplasms
Invasion, Angiogenesis and Metastasis
Carcinogenesis: population and molecular epidemiology (Four lectures, 1–8 Mar.)

Lectures. M. W. F. 12 *Department of Pathology Lecture Theatre*

DR N. AFFARA
Genetic Pathology: Introduction
Molecular Analysis of Mendelian Disorders
Genotype-Phenotype Correlations
Chromosomal Imbalance
Complex Mechanisms: The Genome Mapping Project (Five lectures, 26 Apr.–5 May)

NATURAL SCIENCES TRIPOS, PART 1B (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

PATHOLOGY (continued)

PROF. A. H. WYLLIE
 Genetic Basis of Neoplasia: oncogenes
 Genetic Basis of Neoplasia: oncosuppressor genes
 Genetic Basis of Neoplasia: multistage carcinogenesis
 Molecular Basis of Tumour Therapy
 (Four lectures, 10–17 Mar.)

Practical Work *Department of Pathology*
 Tu. 10–12 and Th. 2–4 or Tu. 2–4 and Th. 10–12 or
 W. and F. 10–12 or 2–4

Practical Work *Department of Pathology*
 Tu. 10–12 and Th. 2–4 or Tu. 2–4 and
 Th. 10–12 or W. and F. 10–12 or 2–4

Practical Work *Department of Pathology*
 Revision classes. Tu. 10–12 and Th. 2–4 or
 Tu. 2–4 and Th. 10–12 or W. and
 F. 10–12 or 2–4

PHARMACOLOGY

Course organiser: Dr T. P. D. Fan E-mail: tpf1000@cus.cam.ac.uk

DR C. W. TAYLOR
 Drugs and receptors: Receptor mechanisms. (Five lectures, 8–18 Oct.)
 PROF. R. F. IRVINE
 Drugs and receptors: Local and intracellular messengers. (Six lectures, 20 Oct.–1 Nov.)
 DR C. W. TAYLOR
 Drugs and receptors: Ligand-gated ion channels. (Four lectures, 3–10 Nov.)
 DR J. M. EDWARDSON
 Drugs and receptors: Integration of signalling pathways. (Six lectures, 12–24 Nov.)
 DR P. M. DEAN
 Drug metabolism. (One lecture, 26 Nov.)
 PROF. P. A. McNAUGHTON
 Inflammation and pain. (Two lectures, 29 Nov., 1 Dec.)

Practical work
 Tu. 12–1 or W. 12–1 and Tu. 2–5 or W. 2–5. A detailed timetable will be posted in the Department

DR R. D. MURRELL-LAGNADO
 Pharmacokinetics, general Anaesthetics. (Five lectures, 19–28 Jan.)
 DR P. M. DEAN
 Drug design. (Two lectures, 31 Jan.–2 Feb.)
 DR M. J. WARING
 Chemotherapy. (Seven lectures, 4–18 Feb.)
 DR R. M. HENDERSON
 Cardiovascular and renal pharmacology. (Eleven lectures, 21 Feb.–15 Mar.)

Practical work
 The same continued

DR P. J. RICHARDSON
 Central nervous system: neurodegeneration, psychoses, affective disorders. Pain and opiates. (Seven lectures, 26 Apr.–10 May)
 DR D. R. FERGUSON
 Toxicology. (Two lectures, 12, 15 May)

Practical Work
 The same continued

Note that lectures in the Lent and Easter term begin on Wednesday rather than Friday. This change is to allow more time between the end of the course and the examinations.

PHYSICS

Lectures, course C, are given in the Maxwell Lecture Theatre, New Museums Site, M. W. F. 12. Laboratory Work, course Q, takes place at the Cavendish Laboratory (West Cambridge).

The Year Group Co-ordinator: Dr A. L. Bleloch E-mail: IB-single-physics@phy.cam.ac.uk

All students must attend an introductory talk and register for laboratory course Q at 2.30 on Wednesday 6 October at the *Cavendish Laboratory*.

Laboratory work is continuously assessed.

Course C
 DR A. L. BLELOCH
 Waves and Imaging Instruments

DR E. H. LINFIELD
 Quantum Physics

PROF. H. AHMED
 Physics of Electronic Devices

Course Q
 MR P. J. WARNER
 Electronics and Systems. M. Tu. Th. or F. 2–5

DR A. L. BLELOCH
 Waves. M. Tu. Th. or F. 2–5

NATURAL SCIENCES TRIPOS, PART 1B (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

PHYSIOLOGY

Course Organiser: Dr D. J. Tolhurst E-mail: djt12@cam.ac.uk

Lectures. M. W. F. 9 *Main Physiology Lecture Theatre*
(except where otherwise stated)

DR A. L. R. FINDLAY

Endocrinology. (Ten lectures, 8–29 Oct.)
Babbage Lecture Theatre

DR W. H. COLLEDGE

Reproduction. (Eight lectures, 1–17 Nov.)

DR J. C. D. HICKSON

Fetal, neonatal and maternal physiology. (Six lectures,
19 Nov.–1 Dec.)**Practical work**

Th. 2–4

Lectures. M. W. F. 9 *Main Physiology Lecture Theatre*

DR H. R. MATTHEWS

Synapses and sensory receptors. (Four lectures,
21–28 Jan.)Neurophysiology of vision. (Six lectures,
31 Jan.–11 Feb.)

DR D. J. TOLHURST

Somatic sensation and pain. (Four lectures,
14–21 Feb.)Control of movement and posture. (Six lectures,
23 Feb.–6 Mar.)

DR I. M. WINTER

Hearing. (Four lectures, 8–15 Mar.)

Practical WorkTu. Th. 2–4 *or* Th. 10–12, 2–4**Lectures.** M. W. F. 9 *Main Physiology Lecture Theatre*

DR H. R. MATTHEWS

Taste and smell. (One lecture, 28 Apr.)

DR A. L. R. FINDLAY

Higher functions of the nervous system.
(Three lectures, 1–5 May)

DR J. H. ROGERS

Developmental neurobiology. (Four lectures,
8–15 May)**Practical work**

Th. 2–4

PLANT SCIENCES

Course co-ordinator: Dr A. G. Smith E-mail: as25@mole.bio.cam.ac.uk

*All lectures will take place in the Large Lecture Theatre of the Department of Plant Sciences,
on Tu. Th. S. 11*

DR M. A. TESTER

Diversity of plants. (Four lectures, beginning 7 Oct.)

DR J. M. HIBBERD AND DR A. G. SMITH

Photosynthesis and management of reserves.
(Ten lectures, 16 Oct.–6 Nov.)

DR E. V. J. TANNER AND PROF. R. A. LEIGH

Water and nutrients. (Ten lectures, 9–30 Nov.)

DR M. A. TESTER

Plants and temperature.

(Four lectures, 18–25 Jan.)

Please note the early start of this course

DR J. M. DAVIES, DR K. JOHNSTONE AND

DR J. P. CARR

Plants and micro-organisms. (Twelve lectures,
27 Jan.–22 Feb.)

DR A. G. SMITH

Plants and animals. (Three lectures, 24–29 Feb.)

DR B. J. GLOVER

Plant development. (Six lectures, 2–14 Mar.)

DR J. BARRETT AND DR D. BRIGGS

Plant variation, evolution and conservation.
(Eight lectures, 25 Apr.–11 May)*Please note the early start of this course*

PROF. R. A. LEIGH

Exploitation of plants. (Three lectures, 13–18
May)Students will be expected to do four hours' practical work per week, between Th. 12–5 *or* F. 11–5.

NATURAL SCIENCES TRIPOS, PART II (GENERAL)

MICHAELMAS 1999

LENT 2000

EASTER 2000

A candidate may offer

- either (a) Advanced Physics and one other subject from Part IB excluding Geological Sciences A of the Natural Sciences Tripos which he has not previously offered;
 or (b) one subject from Part IB of the Natural Sciences Tripos which he has not previously offered and one Special Subject;
 or (c) two Special Subjects.

Details of the permissible combination of subjects, within the scheme set out above, and also of restrictions on the offering of certain subjects may be found in Regulation 26 for the Natural Sciences Tripos.

The time-tables of teaching for the Special Subjects are set out below. For the times of teaching for subjects in Part IB please see the relevant entries on the other pages.

SPECIAL SUBJECT CHEMISTRY

Course Co-ordinator: Dr J. H. Keeler E-mail: James.Keeler@ch.cam.ac.uk

The course consists of lectures and practical work selected from the courses available for Part II Option A Chemistry (see p. 177). Further details can be obtained from Dr J. H. Keeler in the *Department of Chemistry*.

SPECIAL SUBJECT HUMAN IMPACT ON THE ENVIRONMENT

The course consists of lectures and candidates will also be required to submit a 5,000 word essay on a subject proposed by the candidates and approved by the Head of Department or chosen from a list of approved subjects. The essay to be handed in by the second week of the Easter Term.

Course Organiser: Dr J. R. Flowerdew E-mail: j.r.flowerdew@zoo.cam.ac.uk

Lectures

DR P. GRUBB, DR W. AMOS, DR B. GRENFELL AND
 DR E. V. J. TANNER
 Population and Community Ecology. M. W. F. 5
 (Twenty-four lectures)
Department of Plant Sciences

DR M. BROOKE, DR W. AMOS, DR E. V. J. TANNER,
 DR J. O'SULLIVAN, DR A. BALMFORD,
 DR D. BRIGGS AND DR I. HODGE
 Conservation Biology. M. W. F. 5
 (Twenty-four lectures)
Department of Zoology

DR J. R. FLOWERDEW AND
 DR A. CHEPSTOW-LUSTY
 Human Impact on the Environment.
 M. W. F. 5 (Twelve lectures)
Department of Zoology

SPECIAL SUBJECT PATHOLOGY

This course consists of the lectures in Cellular Pathology available in Part II Pathology (see p. 184). Candidates will also be required to attend classroom work on Monday afternoon between 2 p.m. and 5 p.m. It is important that all candidates attend the Introduction Lecture to Part II Pathology on 6 October at 5 p.m. in the Department of Pathology.

SPECIAL SUBJECT PHYSICS

Year Group Co-ordinator: Dr S. R. Julian E-mail: II-physics@phy.cam.ac.uk

This course consists of about half the lectures and classwork of a candidate offering Part II Experimental and Theoretical Physics (see p. 178). Two options, A and B, are available. All candidates should take 32 hours of lectures from course **H** in the Michaelmas Term and experiment E1. Those offering option A should take 32 hours of lectures from course **H** in the Lent Term and one of the following units of further work; the Computational Physics course and assessment, pre-approved Vacation Work, experiment E2, experiment E3, course TP1, course TP2, a Literature Review. Neither of the courses TP1 and TP2 may be taken unless Mathematics was offered in Part IB of the Natural Sciences Tripos. Those offering option B take 16 hours of lectures from course **H** in the Lent Term together with the lectures and classwork of course **K**. Guidance on suitable combinations of lecture courses will be provided by the Department. A prior knowledge of Physics equivalent to the material covered in Advanced Physics in Part IB will be assumed.

NATURAL SCIENCES TRIPOS, PART II

MICHAELMAS 1999

LENT 2000

EASTER 2000

ANATOMY OPTION A: RESEARCH IN DEVELOPMENTAL BIOLOGY AND NEUROSCIENCE

Course units: Each unit usually comprises Th. F. 9–11.30 and W. 9–12

All teaching will be in the Anatomy Part II Lecture Room unless otherwise stated

Course Organiser: Dr A. C. Roberts E-mail: acr4@cus.cam.ac.uk

DR R. J. KEYNES AND DR A. C. ROBERTS
General Introduction. Tu. 10–12 (5 Oct.)
Course Introduction. W. 10–12 (6 Oct.)

DR S. J. BRAY

Introduction to Development. W. 2–4 (6 Oct.)

DR R. A. H. WHITE AND DR S. J. BRAY

Origins of Pattern. (7, 8, Oct.); W. 10.15 (13 Oct.)

DR D. TANNAHILL AND DR R. J. KEYNES

Regional Identify and Patterning in Vertebrates.
(14, 15, 20 Oct.)

PROF. W. A. HARRIS AND DR N. PAPALOPULU

Neurogenesis in Vertebrates. (21, 22, 27 Oct.)

DR N. BROWN AND DR C. E. HOLT

Tissue Development. (4, 5, 10 Nov.)

Study Week (28 Oct.–3 Nov.)

DR N. BROWN AND DR N. PAPALOPULU

Techniques Workshop. Tu. 2–4 (9 Nov.)

DR A. C. FERGUSON-SMITH AND DR P. N. SCHOFIELD

Genetic imprinting. (11, 12, 17 Nov.)

DR G. J. BURTON AND DR A. C. FERGUSON-SMITH

Control of Mammalian Prenatal Growth.

Th. 2–4.30 (18 Nov.); (19, 24 Nov.)

DR G. M. W. COOK AND DR C. E. HOLT

Axon Pathfinding. (25, 26 Nov., 1 Dec.)

DR R. C. HARDIE AND PROF. W. A. HARRIS

Phototransduction. (20, 21, 26 Jan.)

DR M. H. HASTINGS AND DR E. S. MAYWOOD

The Circadian Clock: a Paradigm for the
Molecular Control of Behaviour.
(27, 28 Jan., 2 Feb.)

DR A. C. ROBERTS AND DR S. A. EDGLEY

Comparison of Approaches to Studying Brain
Function. (3, 4, 9 Feb.)

DR F. J. P. EBLING AND DR J. HERBERT

Puberty. (10, 11, 23 Feb.)

Study Week (14–18 Feb.)

DR R. E. J. DYBALL, DR S. A. EDGLEY

AND DR S. BAKER

Representation of Information in Neuronal
Spike Activity. (24, 25 Feb., 1 Mar.)

DR M. V. SOFRONIEW

Neuronal Degeneration and Regeneration.

(2, 3, 8 Mar.)

ANATOMY OPTION B: DISEASE, SOCIETY AND SEXUALITY

Lectures will start at 4.30, unless otherwise stated

All teaching will be in the Anatomy Part II Lecture Room unless otherwise stated

Course Organiser: Dr G. J. Burton E-mail: gjb2@cam.ac.uk

HIV and AIDS

MRS P. HENDERSON

Introduction. (One lecture, 6 Oct.)

DR L. WILLOCKS AND DR D. DE ANGELIS

Epidemiology of HIV. (Three lectures, 12, 13, 15 Oct.)

DR G. J. BURTON

Materno-fetal Transmission. (One lecture, 18 Oct.)

DR R. A. H. WHITE

Molecular Biology of HIV. (Three lectures,

19, 20, 22 Oct.)

Immunology of HIV. (Three lectures, 25, 26, 27 Oct.)

DR C. CARNE

Clinical Aspects of HIV. F. 2 (Two lectures, 29 Oct.)

Neurobiology of Emotion

DR C. FRASER

Attitudes and Prejudice. (Five lectures. 8, 9, 10, 12, 15
Nov.)

DR A. C. ROBERTS

Neural Basis of Emotions. (Four lectures, 16, 17, 19, 23
Nov.)

Addiction. (Three lectures, 24, 26, 29 Nov.)

DR M. C. MARTINEZ

Biology of Aggression. Tu. 3 (Two lectures, 30 Nov.)

DR M. LONDON

Drugs and Alcohol. W. 2 (One lecture, 1 Dec.)

Workshops, Seminars and Journal Clubs

As announced in the Department (Starting 5 Oct.)

Neurobiology of Emotion

DR J. HERBERT

Stress. (Two lectures, 21, 24 Jan.)

Life Events. (Two lectures, 25, 26 Jan.)

DR N. HUNT

Mood and Depression. (Two lectures,
28, 31 Jan.)

DR J. STEVENSON-HINDE

Relationships. (Three lectures, 1, 2, 4 Feb.)

Sex, Gender and Sexuality

DR A. C. FERGUSON-SMITH

Sexual and Asexual Reproduction.

M. Tu. W. F. 4 (Six lectures, 21, 22, 23, 25,
28, 29 Feb.)

DR J. HERBERT

Sexual Behaviour. (Three lectures, 3, 6, 7,
Mar.)**Workshops, Seminars and Journal Clubs**

As announced in the Department

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

ASTROPHYSICS

All lectures will be delivered in the Hoyle Building, Institute of Astronomy

DR C. D. MACKAY
Introductory Astrophysics. M. 12, Tu. Th. 11

DR P. P. EGGLETON
Statistical Physics. M. W. F. 11

DR C. J. CLARKE
Astrophysical Fluid Dynamics. Tu. Th. 10, F. 12

PROF. G. P. EFSTATHIOU
Theory of Relativity. M. W. F. 10

DR J. E. PRINGLE
Stellar Dynamics and Structure of
Galaxies. M. W. F. 10

DR P. MADAU
Physical Cosmology. M. 12, Tu. Th. 11

DR P. C. HEWETT
Topics in Contemporary Astrophysics.
Tu. Th. 10, F. 12

DR I. R. PARRY
Structure and Evolution of Stars. M. W. F. 11

BIOCHEMISTRY

Course Co-ordinator: Dr D. M. Carrington E-mail: biocpt23@mole.bio.cam.ac.uk

Lectures are given in the Department of Biochemistry, Downing Site building

The course starts with an introductory lecture by Prof. Sir Tom. Blundell at 9 a.m. on Monday 4 October.

Core course lectures take place at 5.30 for the first six weeks of the Michaelmas Term, and at 9 a.m. and 10.30 a.m. thereafter.

Detailed time-tables will be posted in the Department of Biochemistry.

Core lectures

PROF. R. N. PERHAM
Aspects of protein structure: genome to proteome.
(Five lectures, beginning 4 Oct.)

A. N. OTHER
Enzyme structure and function. (Five lectures, beginning
11 Oct.)

DR C. W. J. SMITH
Mechanisms and control of transcription in eukaryotes.
(Five lectures, beginning 18 Oct.)

DR R. J. JACKSON
Protein synthesis and translational control.
(Five lectures, beginning 25 Oct.)

PROF. J. O. THOMAS
Protein-DNA interactions and gene expression.
(Five lectures, beginning 1 Nov.)

DR D. M. CARRINGTON
DNA recombination in genetic exchange and gene
expression. (Five lectures, beginning 8 Nov.)

DR T. R. HESKETH
Receptor tyrosine kinases. (Four lectures, beginning
15 Nov.)

DR J. A. H. MURRAY
Eukaryotic chromosome replication. (Three lectures,
beginning 22 Nov.)

PROF. T. L. BLUNDELL
G protein-based signalling. (Four lectures, beginning
22 Nov.)

DR R. W. FARNDALE
Lipids as signal precursors; adhesive and immune
receptor signalling. (Four lectures, beginning
24 Nov.)

DR C. J. HOWE
Gene expression in plants. (Four lectures, beginning
29 Nov.)

PROF. G. P. C. SALMOND
Signal transduction in prokaryotes. (Four lectures,
beginning 30 Nov.)

Core lectures

DR P. DUPREE
Protein targeting to the endoplasmic
reticulum. (Three lectures, beginning
17 Jan.)

DR S. A. GAYTHER
Genome mapping and identification of disease
genes. (Two lectures, beginning 17 Jan.)

DR A. P. JACKSON
Protein sorting. (Six lectures, beginning
20 Jan.)

DR A. A. GRACE
Disease genes: function and manipulation.
(Three lectures, beginning 21 Jan.)

DR S. E. JACKSON
Protein folding *in vivo*. (Three lectures,
beginning 26 Jan.)

Option lectures

- PROF. G. P. C. SALMOND AND OTHERS
Bacterial virulence and antimicrobial
chemotherapy. (Fifteen lectures)
Option Organiser: Prof. G. P. C. Salmond
- DR A. R. C. RAINE AND OTHERS
Proteins, nucleic acids and their interactions.
(Fifteen lectures)
Option Organiser: Dr A. R. C. Raine
- DR M. D. BRAND AND OTHERS
Bioenergetics. (Fifteen lectures)
Option organiser: Dr M. D. Brand
- DR P. DUPREE AND OTHERS
Plant molecular biology. (Fifteen lectures)
Option Organiser: Dr P. Dupree
- DR C. W. J. SMITH AND OTHERS
Control of gene expression in eukaryotes.
(Fifteen lectures in part joint with Part II
Zoology.)
Option Organiser: Prof. R. A. Laskey
- DR J. P. LUZIO AND OTHERS
Medical biochemistry. (Fifteen lectures)
Option Organiser: Dr J. P. Luzio
- DR J. BLACKBURN AND OTHERS
Enzyme mechanisms and the evolution of
enzyme function. (Fifteen lectures)
Option Organiser: Dr J. Blackburn
- PROF. J. C. METCALFE AND OTHERS
Cardiovascular molecular and cellular
biology. (Fifteen lectures)
Option Organisers: Prof. J. C. Metcalfe and
Dr A. A. Grace

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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BIOCHEMISTRY (continued)

9. DR T. R. HESKETH AND OTHERS
Oncogenes, tumour suppressor genes and carcinogenesis. (Fifteen lectures in part joint with Option E of Part II Pathology.)
Option Organisers: Dr T. R. Hesketh and Dr N. Affara
10. DR A. M. TOLKOVSKY AND OTHERS
Perspectives in molecular neurobiology. (Fifteen lectures)
Option Organiser: Dr A. M. Tolkovsky
11. PROF. C. M. BATE AND OTHERS
Developmental biology. (Twenty-four lectures joint with Part II Genetics, Plant Sciences, and Zoology.)
Option Organiser: Prof. C. M. Bate
12. DR D. J. ELLAR AND OTHERS
Biotechnology. (Fifteen lectures)
Option Organiser: Dr D. J. Ellar
13. DR D. M. CARRINGTON AND OTHERS
Regulation of the eukaryotic cell cycle. (Fifteen lectures)
Option Organiser: Dr D. M. Carrington

Data handling classes

W. 3–5 from 9 Feb.

**CHEMISTRY
(OPTION A AND OPTION B)**

Course Co-ordinator: Dr J. Keeler E-mail: James.Keeler@ch.cam.ac.uk

All lectures will be given in the Department of Chemistry, Lensfield Road

Students must register for the course in the *Part Ib/II Physical Chemistry Practical Laboratory* between 9 and 1 or 2 and 4 on Tuesday 5th October. A booklet containing details of the times of the lecture courses will be given out on registration. Others interested in the lecture courses can obtain a copy of this booklet on application to the Course Co-ordinator.

All students must attend an introductory talk concerning the practical course at 12 noon on Wednesday 6 October in *Lecture Theatre 3*.

NATURAL SCIENCES TRIPOS, PART II (continued)

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EXPERIMENTAL AND THEORETICAL PHYSICS

Lectures are given at the Cavendish Laboratory (West Cambridge), in the Pippard Lecture Theatre unless otherwise stated.

The Year Group Coordinator: Dr S. R. Julian E-mail: II-physics@phy.cam.ac.uk

Students offering option **A** must take the whole of course **H** in the Michaelmas Term and 32 hours of lectures in that course in the Lent Term. They must in addition take course **K**. Concepts in Physics from course **I** and a suitable selection from the material of courses **J** and **S**.

Students offering option **B** must take the whole of course **H**. In addition they must take a suitable selection from the material of courses **J** and **S**. Course **I** is non-examinable.

The material of course **J** is examined at the start of the term following that in which each block, TP1 and TP2, is given.

The course will begin with a meeting on the first Wednesday of Full Term (6 Oct.) at 9.30 a.m. in the *Pippard Lecture Theatre*.

Course H

DR C. G. SMITH
Solid State Physics. M. Th. 9
DR S. R. JULIAN
Thermal and Statistical Physics. Tu. Th. 10
DR D. R. WARD
Quantum Mechanics II. W. F. 9
DR P. ALEXANDER
Computational Physics. M. W. F. 10
(first twelve lectures)
Classes weekdays 2–5 (21 Oct.–1 Dec.) Students attend
one day per week
DR P. ALEXANDER
Relativity and Electrodynamics. Tu. 9
(first four lectures); M. W. F. 10 (last twelve lectures)

Course I**Course J**

DR R. E. ANSORGE AND DR E. TERENTJEV
Theoretical Physics TP1. Tu. Th. 12–1 (Twelve lectures,
beginning 12 Oct.); Tu. 2–4 (Four classes 19 Oct.,
2, 16, 30 Nov.)

Course K**Course S**

DR P. F. SCOTT AND OTHERS
Experiment E1. Registration. W. 9.30 (6 Oct.)
DR D. R. WARD AND OTHERS
Literature Review

DR R. T. PHILLIPS
Atoms and Light. Tu. Th. 9
DR R. PADMAN
Systems. Tu. Th. 10 (first eight lectures)
DR C. H. SHEPHERD-THEMISTOCLEOUS
Nuclear Physics. M. W. F. 9
(first twelve lectures)
DR V. GIBSON
Particle Physics. M. W. F. 9
(last twelve lectures)
DR M. WARNER
Fluids. M. W. F. 10 (first sixteen lectures)

PROF. M. S. LONGAIR
Concepts in Physics. Tu. Th. 10
(last eight lectures)
THE STAFF OF THE CAVENDISH LABORATORY
Current Research Work in the Cavendish
Laboratory. (Not examinable). See Part
III Experimental and Theoretical Physics
(p. 193).

PROF. P. B. LITTLEWOOD AND DR G. RAJAGOPAL
Theoretical Physics TP2. Tu. Th. 12–1
(Twelve lectures, beginning 25 Jan.);
Tu. 2–4 (Four classes 1, 15, 29 Feb., 14
Mar.)

PROF. L. M. BROWN AND DR R. E. ANSORGE
Physics in Action. F. 11.30
Mott Seminar Room
Group Project Work. F. 2–4
Ryle Seminar Room

DR P. F. SCOTT AND OTHERS
Experiment E2. Registration. W. 9.30 (19 Jan.)
DR D. R. WARD AND OTHERS
The same continued

DR R. J. NEEDS AND OTHERS
General Examples Class. M. W. 2–4

DR D. R. WARD AND OTHERS
The same continued

NATURAL SCIENCES TRIPOS, PART II (continued)

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GENETICS

Course Co-ordinators: Dr D. MacDonald and Dr J. Barrett E-mail: PartII.organisers@gen.cam.ac.uk

A detailed timetable for this course is available in the Department of Genetics

DR C. O'KANE, DR J. A. BARRETT, DR D. MACDONALD,
DR P. OLIVER, DR D. SUMMERS, PROF. M. ASHBURNER
AND DR J. AHRINGER
Genes and Organisms. M. Tu. W. Th. F. 10.30
(Thirty lectures, beginning 8 Oct.)
DR D. SUMMERS AND DR P. OLIVER
Prokaryotic Genetics. M. Tu. W. Th. F. 10.30
(Nine lectures, beginning 19 Oct.)
DNA repair. M. Tu. W. Th. F. 9, 10.30 (Five lectures,
beginning 22 Nov.)
DR P. O'DONALD
Genetic Pathology and Human Cancer (jointly with Part
II Pathology. Tu. Th. 5, S. 10 (Eighteen lectures,
beginning 12 Oct.)
DR P. O'DONALD
Statistical Methods. M. Tu. W. Th. 10 (Six sessions,
beginning 1 Nov.)
DR J. A. BARRETT
Quantitative Genetics. W. Th. F. 10.30 (Three lectures,
beginning 26 Nov.)
PROF. D. GLOVER AND STAFF
Journal sessions. M. 11.30 (Six sessions, beginning
18 Oct.)
Social Aspects of Genetics. W. 2 (Five sessions,
beginning 20 Oct.)

DR J. A. BARRETT, DR P. O'DONALD AND DR N.
GOLDMAN
Evolutionary, Population and Ecological
Genetics. M. Tu. W. Th. F. 12
(Thirty-two lectures, beginning 10 Jan.)
PROF. C. M. BATE AND OTHERS
Part II Development Option. M. Tu. F. 5
(Twenty-four lectures, beginning 21 Jan.)
DR I. FURNER, DR C. FARR, DR C. O'KANE AND
DR A. BRAND
Transgenesis. W. Th. 9 (Sixteen lectures,
beginning 12 Jan.)
PROF. D. GLOVER AND STAFF
Journal sessions. M. 10.30 (Eight sessions,
beginning 17 Jan.)

Revision Seminars. (Five sessions)

GEOLOGICAL SCIENCES AND MINERAL SCIENCES

Students offering Option A (leading to the three year degree – Part IIA) must take two core courses in the Michaelmas Term and two options in the Lent and Easter Terms. They must in addition attend the Skills course S1 in the Michaelmas Term.

Students offering Option B (leading to Part IIB and to the four year degree – Part III) must take two core courses in the Michaelmas Term and three options in the Lent and Easter Terms. They must in addition attend the Skills course S1 in the Michaelmas Term.

Core C1 Geophysics

PROF. R. S. WHITE, DR J. A. JACKSON AND
PROF. D. P. MCKENZIE
Lectures. M. Th. 9 *Harker Room*
Practicals. M. Th. 10–12 *Petrology Laboratory*
Convenor: Dr J. A. Jackson

Core C2 Petrology and Geochemistry

DR T. J. B. HOLLAND, DR S. GIBSON AND DR R. JAMES
Lectures. Tu. F. *Harker Room*
Practicals. Tu. F. 10–12 *Petrology Laboratory*
Convenor: Dr S. Gibson

Core C3 Sedimentology and Palaeontology

PROF. I. N. McCAYE, DR P. F. FRIEND AND DR R. B. RICKARDS,
DR J. A. D. DICKSON AND DR R. A. WOOD
Lectures. W. 9, F. 12 *Harker Room*
Practicals. W. 10–12, F. 2–4 *Palaeontology Laboratory*
Convenor: Prof. I. N. McCaye

Core C4 Mineralogy

DR T. J. B. HOLLAND, DR M. WELCH AND DR S. A. T. REDFERN
Lectures. M. W. 12 *Harker Room*
Practicals. M. W. 2–4 *Petrology Laboratory*
Convenor: Dr S. A. T. Redfern

Core C5 Mineral Physics

DR M. T. DOVE AND DR M. WELCH
Lectures. Tu. F. 12 *Harker Room*
Practicals. Tu. F. 2–4 *Harker II Room*
Convenor: Dr M. T. Dove

Skills Course S1

DR N. H. WOODCOCK AND DR A. G. SMITH
Tu. Th. 2–5 *Harker Room and Computer Room*
(First three weeks)
Convenor: Dr N. H. Woodcock

Field Course to Greece 3–11 Dec. 1999

DR J. A. JACKSON AND DR A. G. SMITH

Option 1 Basin Dynamics

DR N. J. WHITE, DR J. A. JACKSON, DR P. F. FRIEND
AND DR R. ENGLAND
Lectures. M. 9, Th. 10 *Tilley Room*
Practicals. M. 10–11.30, Th. 11–12.30
Petrology Laboratory
Convenor: Dr J. A. Jackson

Option 2 Ridges and the Sea Floor

DR M. J. BICKLE, DR M. C. SINHA,
PROF. R. S. WHITE AND DR A. SCHULTZ
Lectures. Tu. 9, F. 2 *Harker Room*
Practicals. Tu. 10–11.30, F. 3–4.30 *Petrology
Laboratory*
Convenor: Dr M. C. Sinha

Option 3 Metamorphic and Igneous Processes

DR T. J. B. HOLLAND, DR M. J. BICKLE,
PROF. D. P. MCKENZIE, DR S. GIBSON AND
DR D. M. PYLE
Lectures. W. F. 9 *Harker Room*
Practicals. W. F. 10–11.30 *Petrology
Laboratory*
Convenor: Dr M. J. Bickle

Option 4 Basin-fill Architecture and Diagenesis

DR P. F. FRIEND, PROF. I. N. McCAYE AND
DR J. A. D. DICKSON
Lectures. Tu. Th. 2 *Harker Room*
Practicals. Tu. Th. 3–4.30 *Structural
Laboratory*
Convenor: Prof. I. N. McCaye

Option 5 Evolutionary Palaeobiology

DR D. B. NORMAN, DR N. J. BUTTERFIELD,
DR P. UPCHURCH AND DR J. DEAN
Lectures. M. F. 2 *Harker Room*
Practicals. M. F. 3–4.30 *Palaeontology
Laboratory*
Convenor: Dr N. J. Butterfield

The same continued. (Eight revision sessions)

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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GEOLOGICAL SCIENCES AND MINERAL SCIENCES (continued)

<p>Option M3 Spectroscopic Studies of Minerals PROF. E. SALJE, DR I. FARNAN, DR A. SHEN, DR S. A. T. REDFERN AND DR M. T. DOVE <i>Lectures.</i> W. 9, Th. 2 <i>Harker Room II</i> <i>Practicals.</i> W. 10–11.30, Th. 3–4.30 <i>Harker Room II</i> Convenor: Dr I. Farnan</p>	<p>Option M1 Mineralogy of the Earth and Planetary Deep Interiors DR A. SHEN, DR S. A. T. REDFERN, DR M. WELCH, AND DR I. FARNAN <i>Lectures.</i> Tu. 11, W. 2 <i>Oxburgh Room</i> <i>Practicals.</i> Tu. 12–1.30, W. 2–3.30 <i>Petrology Laboratory</i> Convenor: Dr A. Shen</p>	The same continued. (Eight revision sessions)
	<p>Option M2 Melts, Glasses, Disordered Systems DR I. FARNAN AND DR A. SHEN <i>Lectures.</i> Th. 2, F. 11 <i>Oxburgh Room</i> <i>Practicals.</i> Th. 3–4.30, F. 12–1.30 <i>Oxburgh Room</i> Convenor: Dr I. Farnan</p>	The same continued. (Eight revision sessions)

HISTORY AND PHILOSOPHY OF SCIENCE

A detailed timetable and course handbook are available in the Department. For further details contact hps-admin@lists.cam.ac.uk

Unless otherwise stated lectures, classes and seminars will be held in the History and Philosophy of Science Seminar Rooms, Free School Lane

PRIMARY SOURCES SEMINARS

(It is essential that all N.S.T. Part II students attend this part of the course) THE TEACHING OFFICERS W. 4

DR S. SCHAFFER

James Clerk Maxwell's Encyclopedia Britannica entry 'Atom' (1875)

PROF. P. LIPTON

Alan Turing, 'Computing, Machinery and Intelligence', *Mind*, vol. LIX (1950), 433–460

DR L. TAUB

Epicurus's letter to Pythocles

DR J. FORRESTER

Sigmund Freud, *Three Essays on the Theory of Sexuality*

PROF. N. JARDINE

David Hume, *Treatise of Human Nature*, Book 1, part 2, section 6 and part 4, section 2

DR J. SECORD

Charles Darwin 'On the Origin of Species' 1859 edition

DR N. HOPWOOD

X-ray image of Mrs Roentgen's hand (1895)

DR W. CLARK

Rene Descartes, *Discourse on Method*

PAPER 1: CLASSICAL TRADITIONS IN THE SCIENCES

(Co-ordinators: Dr L. Taub and Dr S. Kusukawa)

DR L. TAUB, DR S. KUSUKAWA AND PROF. R. MCKITTERICK

Introduction to Paper 1. Th. 10 (weeks 1–4) (*Essential. No supervisions*)

DR L. TAUB, DR J. MONTGOMERY AND OTHERS

Arabic Science. Th. 10 (weeks 5–8)

PROF. SIR GEOFFREY LLOYD

Ancient Greek Science. [O11] (16 L, 8C) Tu. Th. 11, Tu. 5 *Classics Faculty*

DR R. FRENCH

Medieval Natural Philosophy. Tu. 10 (weeks 5–8)

DR L. TAUB, DR S. DE RENZI AND DR L. KASELL

Instruments, Books and Collections. Tu. 10 (weeks 1–4)

THE TEACHING OFFICERS

Dissertation Seminars. W. 4

DR A. CUNNINGHAM AND DR S. KUSUKAWA

God and Nature: Early Modern Natural Philosophy. Tu. 9

DR L. TAUB, PROF. N. JARDINE AND

DR S. KUSUKAWA

Early Modern Cosmography and Astronomy. Th. 11

The same continued (weeks 1–4)

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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HISTORY AND PHILOSOPHY OF SCIENCE (continued)

**PAPER 2: NATURAL AND MORAL
PHILOSOPHIES**

(Co-ordinator: Dr W. Clark)

DR W. CLARK AND MR S. MANDELBROTE

Natural Philosophy and Exact Sciences. Tu. 12

DR L. KASSELL

Astrology, Alchemy and Magic. F. 11 (weeks 1–4)

DR R. SERJEANTSON

Nature and the Philosophy of Evidence, 1557–1739.
F. 11 (weeks 5–8)

DR M. FRASCA SPADA

Human Nature and Knowledge I: Locke, Berkeley and
Hume. W. 10**PAPER 3: SCIENCE, INDUSTRY AND
EMPIRE**

(Co-ordinator: Dr J. Secord)

DR J. SECORD

Defining Science in the Nineteenth Century: Britain and
France. M. 11 (weeks 1–4)

DR N. HOPWOOD, DR S. DE CHADAREVIAN AND

PROF. N. JARDINE

Laboratories and Disciplines from the Napoleonic Wars
to National Socialism. W. 3

DR J. SECORD

Darwin and Evolution. Th. 3

**PAPER 4: METAPHYSICS, EPISTEMOLOGY,
AND THE SCIENCES**

(Co-ordinator: Prof. P. Lipton)

DR R. JENNINGS

Recent History of the Philosophy of Science. M. 10

PROF. P. LIPTON

Explanation, Causation and Law. W. 12

DR M. HOGARTH

The Metaphysics of Space and Time. M. 3

DR M. HILD

Probability and Scientific Inference. F. 2 (weeks 5–8)

**PAPER 5: SCIENCE AND TECHNOLOGY
STUDIES**

(Co-ordinator: Dr J. Secord)

DR A. BARRY

Social Theory. F. 2 (weeks 1–4)

DR P. GOULD AND DR D. THOM

Gender and Science. (4 L, 4 C). M. 2

DR J. FORRESTER, DR R. JENNINGS AND OTHERS

Ethical Dimensions of Science. W. 11

PROF. N. JARDINE

Historiography of the Sciences. W. 2

**PAPER 6: HISTORY AND PHILOSOPHY OF
MIND**

(Co-ordinator: Dr J. Forrester)

DR J. FORRESTER

Freud, Psychoanalysis and the Twentieth Century.

F. 10 (weeks 1–7) *Mill Lane Lecture Room 4*

The same continued

DR M. FRASCA SPADA AND PROF. N. JARDINE

Human Nature and Knowledge II: Kant.
F. 12 (weeks 5–8)

PROF. N. JARDINE, DR E. SPARY AND DR P. WHITE

Natural Histories. M. 3

DR L. TAUB

Instruments, Models and Tools. Tu. 11
(weeks 1–4)

DR W. CLARK

History of Universities: I. Th. 3 (weeks 1–4)

DR M. HOGARTH

History of Theoretical Physics;
1850–1950. M. 2

DR J. SECORD, DR L. TAUB, DR O. SIBUM AND

OTHERS

Instruments, Models, and Working
Experiments. M. 11, F. 2 (weeks 1, 2)

DR W. CLARK

History of Universities: II. Th. 3 (weeks 5–8)

DR J. SECORD

Science and Imperialism. W. 10

DR P. FARA

Images of Science. M. 10 (weeks 1–4)

DR J. FORRESTER

Thinking in Cases. W. 11

PROF. P. LIPTON

Problems of Induction. W. 12

DR S. DE CHADAREVIAN

Science and War. M. 10 (weeks 5–8)

DR W. CLARK

Sociology of Scientific Knowledge. W. 2
(weeks 1–4)

DR J. SECORD

Science Communication. W. 2 (weeks 5–8)

The same continued. Th. 10 (weeks 1–5)

MS I. SINGH

Psychopharmacology in History and
Culture. Tu. 10 (weeks 5–8)

DR D. THOM

Topics in the History of British Psychology.
F. 10

DR N. MANSON

Unconscious Mentality and Freud's
Methodology. W. 3

PROF. P. LIPTON

Topics in the Philosophy of Mind. F. 11

Maxwell Lecture Theatre

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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HISTORY AND PHILOSOPHY OF SCIENCE (continued)

PAPER 7: HISTORY OF MEDICINE FROM ANTIQUITY TO THE ENLIGHTENMENT

(Co-ordinator: Dr N. Hopwood)

DR R. FRENCH

History of Prescientific Medicine. Tu. 2, Th. 12

PAPER 8: MODERN MEDICINE AND BIOMEDICAL SCIENCES

(Co-ordinator: Dr N. Hopwood)

DR N. HOPWOOD, DR S. DE CHADAREVIAN AND

DR H. KAMMINGA

Making Modern Medicine. M. F. 12, Th. 2

PROF. G. LLOYD

Disease in Greek Thought. Th. 12 *Classics Faculty*

DR C. SALAZAR

Surgery in the Ancient World. F. 12
(weeks 1-4)

DR S. KUSUKAWA

Renaissance Medical Illustration. Th. 2
(weeks 1-4)

DR S. DE RENZI

Medicine and the Law, 1500-1800. Tu. 2
(weeks 5-8)

DR G. BERRIOS

History of Psychopathology and
Psychiatry. M. 12 (weeks 1-4)

DR J. FORRESTER

Social and Institutional History of
Psychiatry. M. 12 (weeks 5-8)

DR A. CUNNINGHAM

Dissection and the Body in the Age of
Revolutions. Tu. 2 (weeks 1-4)

DR N. HOPWOOD

Embryos and the Unborn. Th. 2 (weeks 5-8)

Prof. Lipton and Dr Secord would like to see all Part II students on Wednesday, 6 October at 11 a.m. in Seminar Room 2, Department of History and Philosophy of Science, Free School Lane

Attention is drawn to courses announced by other authorities. Students are particularly advised to attend other relevant courses in the Faculties of History, Philosophy and Social and Political Sciences.

DR P. BURSILL-HALL

Topics in the History of Mathematics. M. W. F. 4
Mill Lane Lecture Room

PROF. E. J. CRAIG

Hume. Tu. Th. 12 (weeks 1-4) [Phil]

DR F. WATTS

Theological and Scientific Perspectives. M. 11 [Div]
Divinity School

DR P. SMITH

Theories and Theory Change. Th. 12 [Phil]

DR N. HALLOWELL, MR G. RADICK AND DR D. THOM

Darwinism and the Social Sciences. Tu. 2
SPS Seminar Room

DR N. WRIGHT

Latin for Beginners [32C]. M. Tu. Th. F. 5
Classics Faculty

DR B. HILTON AND DR J. SECORD

Science and Religion in Britain, c. 1830-1870.
F. 10 (from 18 Feb.) [Hist]

DR P. SMITH

Scientific Realism. W. 12 [Phil]

The same continued (32C). M. Tu. Th. F. 5

The same continued (16C). M. Tu. Th. F. 5

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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MATERIALS SCIENCE AND METALLURGY

Course Co-ordinator: Dr R. V. Kumar E-mail: Part II@msm.cam.ac.uk

All lectures will be given in the Austin Building Lecture Theatre

A detailed timetable is available in the Department

<p>PROF. D. J. FRAY C1 Phase equilibria</p> <p>DR J. A. LEAKE C3 Mathematical Methods</p> <p>DR A. L. GREER C4 Tensor Properties</p> <p>DR K. M. KNOWLES C6 Crystallography</p> <p>DR J. A. LITTLE C8 Chemical Stability</p> <p>DR H. K. D. H. BHADESHIA C9 Alloys</p> <p>DR I. M. HUTCHINGS C12 Plasticity and Deformation</p> <p>DR W. J. CLEGG C13 Ceramics</p> <p>DR R. V. KUMAR C17 Heat and Mass Transfer</p> <p>INDUSTRIAL VISITORS To be announced</p> <p>Industrial Visit All day (2 Dec.)</p> <p>Example Classes M. Th. 11.15–1 (beginning 11 Oct.)</p> <p>Practical Classes M. Tu. W. 2–5 (Two sessions, to be chosen each week)</p> <p>Management Option DR G. BURSTEIN AND PROF. D. J. FRAY F. 2–3</p> <p>Language Option (Two hours per week) M. 4–6 or Tu. 4–6 or W. 2–4 or Th. 2–4 or Th. 4–6 or F. 2–4.</p>	<p>PROF. J. E. EVETTS C5 Physical Properties</p> <p>DR L. GREER C7 Kinetics</p> <p>PROF. A. H. WINDLE C10 Polymer Microstructures</p> <p>DR G. T. BURSTEIN C11 Surfaces and Interfaces</p> <p>DR T. W. CLYNE C16 Composite Materials</p> <p>INDUSTRIAL VISITORS To be announced</p> <p>Industrial Visit Half day (15 Mar.)</p> <p>The same continued</p> <p>Design Project Materials Project</p> <p>Management Option Details to be announced</p> <p>Language Option The same continued</p>	<p>DR E. R. WALLACH C2 Selection of Materials</p> <p>DR G. GOLDBECK-WOOD C14 Polymer Processing</p> <p>DR D. KNOWLES C15 Fracture and Fatigue</p>
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NEUROSCIENCE

Course Co-ordinator Dr R. Hardie E-mail: rch14@hermes.cam.ac.uk

All lectures will be held in Lecture Room 2 Austin Building, unless otherwise stated

<p>Module 1. Development, Degeneration and Regeneration M. Th. 9, M. 12*</p> <p>PROF. C. M. BATE Early development of the nervous system. (Six lectures, 7, 11, 14, 18, 21, 25 Oct.)</p> <p>DR G. COOK Axonal growth. (Four lectures, 28 Oct., 1, 4, 15 Nov.)</p> <p>READING WEEK (8–12 Nov.)</p> <p>PROF. W. HARRIS Development of connections. (Four lectures, 18, 22*, 25, 29 Nov.)</p> <p>Module 2. Cellular and molecular neurobiology Lectures. W. F. 9</p> <p>DR R. MURRELL-LAGNADO Membrane-located voltage sensors and control of neurone function. (Five lectures, 6, 8, 13, 15, 20 Oct.)</p> <p>DR J. A. KOENIG Receptor – control of neuronal excitability (a) slow neurotransmitters. (Four lectures, 22, 27, 29 Oct., 3 Nov.)</p> <p>DR A. J. MORTON Receptor – control of neuronal excitability (b) fast neurotransmitters. (Five lectures, 5, 17, 19, 24, 26 Nov.)</p> <p>DR E. K. MATTHEWS Free radicals in neuronal systems. (One lecture, 1 Dec.)</p>	<p>PROF. E. B. KEVERNE Development of brain and behaviour. (Three lectures, 17, 20, 24 Jan.)</p> <p>DR M. SOFRONIEW Neural degeneration. (Four lectures, 27 Jan., 3, 7, 10 Feb.)</p> <p>READING WEEK (21–26 Feb.)</p> <p>DR R. BARKER Neural regeneration. (Four lectures, 14, 17 Feb., 9, 13 Mar.)</p> <p>PROF. A. COMPSTON Glial degeneration and repair. (Three lectures, 8 Feb., 2, 6 Mar.)</p> <p>MR P. KIRKPATRICK Protection from ischaemia. (One lecture, 16 Mar.)</p> <p>PROF. R. F. IRVINE Calcium signalling. (Three lectures, 19, 21, 26 Jan.)</p> <p>DR J. M. EDWARDSON Intracellular signalling and neurotransmitter release. (Four lectures, 28 Jan., 2, 4, 9 Feb.)</p> <p>DR P. THORN Synaptic mechanisms. (Three lectures, 11, 16, 18 Feb.)</p> <p>READING WEEK (21–26 Feb.)</p> <p>DR B. McCABE Synaptic plasticity. (Three lectures, 1, 3, 8 Mar.)</p> <p>DR H. BADING Regulation of gene expression. (Two lectures 10, 15 Mar.)</p>
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NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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NEUROSCIENCE (continued)

Module 3. Control of action**Lectures.** M. 12*, W. F. 10

PROF. M. BURROWS

Synaptic, cellular and network properties. (Four lectures, 6, 8, 13, 15 Oct.)

DR S. EDGLEY

Cerebellum. (Four lectures, 18*, 20, 22, 27 Oct.)

DR S. BAKER

Motor cortex. (Three lectures, 29 Oct., 3, 5, Nov.)

READING WEEK (8–12 Nov.)

DR P. EVANS

Modulating a system. (Four lectures, 17, 19, 24, 26 Nov.)

DR S. EDGLEY

Skilled movement discussion. (One lecture, 1 Dec.)

Module 4. Sensory systems**Lectures.** Tu. 9, Th. 10

DR R. HARDIE

Photoreceptors. (Four lectures, 7, 12, 14, 19 Oct.)

PROF. E. B. KEVERNE

Olfactory receptors. (Two lectures, 21, 26 Oct.)

PROF. S. LAUGHLIN

Visual processing in the retina. (Five lectures, 28 Oct., 2, 4, 16, 18 Nov.)

READING WEEK (8–12 Nov.)

DR A. PELAH

Visual processing in the cortex. (Four lectures, 23, 25, 30 Nov., 2 Dec.)

Module 5. Learning, Memory and Cognition**Lectures.** M. Tu. 10

DR B. McCABE

Cellular mechanisms of learning and memory. (Four lectures, 11, 12, 18, 19 Oct.)

DR P. BRENNAN

Olfactory learning. (Four lectures, 25, 26 Oct., 1, 2 Nov.)

READING WEEK (8–12 Nov.)

DR A. DICKINSON

Conditioning and associative learning. (Four lectures, 15, 16, 22, 23 Nov.)

PROF. N. J. MACKINTOSH

Discrimination learning. (Two lectures, 29, 30 Nov.)

DR L. ANNETT

Striatum. (Four lectures, 19, 21, 26, 28 Jan.)

DR M. HASTINGS

Biological rhythms. (Four lectures, 4, 9, 11, 16 Feb.)

READING WEEK (21–26 Feb.)

DR R. CARPENTER

Neural decisions. (Three lectures, 28 Feb*, 1, 3 Mar.)

DR J. HERBERT

Chemical control of motivation and emotion. (Four lectures, 8, 10, 15, 17 Mar.)

DR A. FINDLAY

Somatic sensation. (Three lectures, 18, 20, 25 Jan.)

PROF. A. CRAWFORD

Auditory hair cells. (Two lectures, 27 Jan., 1 Feb.)

PROF. S. LAUGHLIN

Active senses in bats and electric fish. (Four lectures, 3, 8, 10, 15 Feb.)

READING WEEK (21–26 Feb.)

DR J. ALCANTARA

Hearing. (Four lectures, 29 Feb., 2, 7, 16 Mar.)

DR K. KRUMBHOLZ

Hearing – Psychophysics. (Two lectures, 9, 14 Mar.)

PROF. T. W. ROBBINS

Brain mechanism of memory and cognition. (Eight lectures, 17, 24, 31 Jan., 7, 14, 28 Feb., 6, 13 Mar.)
Lecture Room 1 Austin Building

DR R. A. MCCARTHY

Cognitive neuropsychology. (Eight lectures, 18, 25 Jan., 1, 8, 15, 29 Feb., 7, 14 Mar.)

READING WEEK (21–26 Feb.)

* Lectures will start at 12 noon on those days, as indicated.

PATHOLOGY

Course organiser: Dr M. Clark E-mail: mrc7@cam.ac.uk

At the Department of Pathology further details will be posted in our Department and are also available on our web server (URL: <http://www.path.cam.ac.uk>)

Introductory lecture All options. W. 5 (One lecture, 6 Oct.)

It is important that all students attend the introductory lecture

Option A Cellular Pathology**Lectures.** Tu. Th. S. 9DR P. WEISSBERG, DR S. THIRU, DR M. R. BENNETT,
DR C. FITZSIMMONS, DR K. L. H. CARPENTER,
PROF. S. K. SMITH AND DR M. J. MITCHINSON

Arterial Disease

DR Y. W. LOKE AND DR A. KING

Immunobiology of Reproduction

Option B Immunology**Lectures.** Tu. Th. 5, S. 10.15PROF. I. MCCONNELL AND DR H. REYBURN
Haemopoietic and Lymphoid Systems
DR D. ALEXANDER AND PROF. D. FEARON
Lymphocyte signalling

DR M. R. CLARK

Immunoglobulins and T-cell receptors

PROF. J. TROWSDALE AND DR A. KELLY

Major histocompatibility complex and Antigen Presentation

Option A Cellular Pathology**Lectures.** Tu. Th. S. 9DR P. A. W. EDWARDS, DR R. HESKETH,
DR A. PHILPOTT, DR A. BANNISTER, PROF.
S. K. SMITH, PROF. A. VENKITARAMAN,
PROF. A. H. WYLLIE, PROF. V. P. COLLINS,
DR C. CALDAS, DR D. WINTON AND
DR J. STERLING

Cancer

Option B Immunology**Lectures.** Tu. Th. 5, S. 10.15DR N. HOLMES
The Complement System
DR N. HOLMES, DR H. REYBURN AND
DR B. BLACKLAWS
Mechanisms of Immunity
DR A. COOKE
Auto immunity
DR G. BUTCHER
Transplantation**Option A Cellular Pathology****Lectures.** Tu. Th. S. 9DR W. F. BLAKEMORE, DR. R. RIDLEY AND
DR R. J. M. FRANKLIN
Processes in Neuropathology**Option B Immunology****Lectures.** Tu. Th. 5, S. 10.15PROF. I. MCCONNELL
Animal Immunodeficiency Viruses
DR M. R. CLARK
Monoclonal Antibody Therapy
Tumour Immunity
PROF. J. H. S. GASTON
Arthritis

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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PATHOLOGY (continued)

Option C Microbial and Parasitic Disease**Lectures.** M. W. F. 9

DR V. KORONAKIS

Bacterial Disease and Pathogenicity

DR D. BROWN, DR V. KORONAKIS AND DR J. WELLS

Combating Bacterial Disease

DR A. LEVER

Fungal Infections

DR V. KORONAKIS AND DR J. AJIOKA

Research seminars

Option D Virology**Lectures.** M. W. F. 5

PROF. A. C. MINSON AND DR A. BLOOMER

Basic Principles

DR I. BRIERLEY AND DR P. OLIVER

Multiplication of Bacteriophage

DR T. D.K. BROWN, DR I. BRIERLEY, DR J. KARN AND

DR J. H. SINCLAIR

Animal Virus Multiplication

Option E Genetic Pathology**Lectures.** Tu. Th. S. 9

DR J. FURNER, PROF. M. A. FERGUSON-SMITH, DR J. YATES,

DR M. EVANS AND DR N. A. AFFARA

Strategies for Analysing Complex Genomes

DR N. A. AFFARA, DR D. RUBINSZTEIN, DR D. BARTON,

DR M. POPE, PROF. T. COX, DR M. EVANS,

DR D. MacDONALD, DR R. TREMBATH,

DR S. KENWRICK AND DR M. PATTERSON

Studying Disease Genes

Option C Microbial and Parasitic Disease**Lectures.** M. W. F. 9

DR B. KINGSTON, DR J. AJIOKA AND DR R. LE PAGE

Major Protozoal Diseases

DR D. DUNNE AND DR B. KINGSTON

Major Helminth Diseases

Option D Virology**Lectures.** M. W. F. 5

DR P. SISSONS, DR T. D. K. BROWN,

DR S. EFSTATHIO, DR I. BRIERLEY AND

PROF. A. C. MINSON

Viruses in the Multicellular Host.

DR S. INGLIS

Viruses in the Community

DR H. BROWNE AND DR G. DARBY

Intervention

Option E Genetic Pathology**Lectures.** Tu. Th. S. 9

DR P. A. W. EDWARDS, DR T. R. HESKETH,

DR A. KOUZARIDES, PROF. B. A. PONDER,

DR G. EVAN AND DR J. DOORBAR

Somatic Changes to the Genome and Cancer

Option C Microbial and Parasitic Disease**Lectures.** M. W. F. 9

DR D. DUNNE AND DR S. CROFT

Anti-Parasite Strategies

DR D. A. P. BUNDY

Epidemiology

Option D Virology**Lectures.** M. W. F. 5

DR S. INGLIS, DR D. G. D. WIGHT, DR P. SISSONS,

DR T. D. K. BROWN AND

DR S. EFSTATHIOU

Virus Portraits

DR D. A. P. BUNDY

Viruses in the Community

Option E Genetic Pathology**Lectures.** Tu. Th. S. 9

DR P. A. W. EDWARDS

Tumour Biology Revision

PHARMACOLOGY

Course organiser: Dr J. M. Edwardson E-mail: jme1000@cam.ac.uk

*Lectures will be given in the Lecture Theatre, Department of Pharmacology***#Pharmacology of Integrated Systems**

DR P. THORN

Gastro-intestinal pharmacology. Tu. Th. 11
(Four lectures, 7–19 Oct.)

DR C. R. HILEY AND DR W. R. FORD

Cardiovascular pharmacology. M. W. F. 9
(Nine lectures, 8–27 Oct.)

DR A. J. MORTON

Neurodegeneration. Tu. Th. 11 (Six lectures,
21 Oct.–9 Nov.)

DR M. A. BARRAND AND DR P. E. REYNOLDS

Resistance to antibacterial and anti-cancer agents.
M. W. F. 9 (Six lectures, 29 Oct.–10 Nov.)

DR P. THOMAS

Pharmacology of reproduction. M. W. F. 9 (Three
lectures, 22–26 Nov.); Tu. 11 (One lecture, 30 Nov.)

DR D. R. FERGUSON AND DR A. GENAZZANI

Pharmacology of psychiatric disorders. M. W. F. 9, Tu.
Th. 11 (Seven lectures, 11–19 Nov.); Tu. Th. 11 (Two
lectures, 23–25 Nov.)

DR M. A. BARRAND

Blood brain barrier. M. W. 9 (Two lectures,
29 Nov.–1 Dec.)**#Pharmacology of Integrated Systems**

DR T. P. D. FAN

Pharmacology of inflammation and the
immune response. M. W. F. 9
(Five lectures, 21–31 Jan.)

DR R. M. HENDERSON

Hyperlipidaemias and the pharmacology of
the liver. W. F. 9 (Two lectures, 2, 4 Feb.)

DR S. B. HLADKY

General anaesthetics. M. W. F. 9
(Three lectures, 7–11 Feb.)

DR W. WISDEN

Excitatory amino acids. M. W. F. 9
(Three lectures, 14–18 Feb.)

DR K. MURPHY

Synaptic plasticity. M. W. F. 9 (Four lectures,
21–28 Feb.)

PROF. P. A. McNAUGHTON

Cellular and Molecular Aspects of Pain.
M. W. F. 9 (Four lectures, 1–8 Mar.)*#Medical and Veterinary Sciences Tripos, Part II Pharmacology of Integrated Systems**Medical and Veterinary Sciences Tripos, Part II Four paper pharmacology consists of all the lectures offered for NST Part II Pharmacology*

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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PHARMACOLOGY (continued)

Molecular and Cellular Pharmacology

- DR R. M. HENDERSON
Patch clamp recording. M. W. F. 10 (Three lectures, 8–13 Oct.)
- DR E. K. MATTHEWS
Hormone receptors and growth factors. Tu. Th. 9 (Four lectures, 12–21 Oct.)
- DR P. J. RICHARDSON
Molecular biology of ligand-gated channels and G-protein coupled receptors. M. W. F. 10 (Six lectures, 15–27 Oct.)
- DR J. M. YOUNG
Quantitative receptor pharmacology. Tu. Th. 9 (Four lectures, 26 Oct.–4 Nov.)
- DR R. MURRELL-LAGNADO, DR S. B. HLADKY AND DR E. K. MATTHEWS
Potassium, sodium and calcium channels. M. W. F. 10 (Eleven lectures, 29 Oct.–22 Nov.)
- DR M. J. WARING AND DR V. K. K. CHATTERJEE
Drugs, receptors and DNA. Tu. Th. 9 (Five lectures, 9–23 Nov.)
- DR P. M. DEAN AND DR P. J. RICHARDSON
Pharmacogenomics. M. W. F. 10 (Four lectures, 24 Nov.–1 Dec.)
- DR E. K. MATTHEWS
Photon pharmacology. Tu. Th. 9 (Two lectures, 25–30 Nov.)

Molecular and Cellular Pharmacology

- DR D. R. FERGUSON
Pharmacology of epithelial ion transport. Tu. Th. 9 (Four lectures, 20 Jan.–1 Feb.)
- DR C. W. TAYLOR, PROF. R. F. IRVINE AND DR P. THORN
Intracellular signalling and transduction. M. W. F. 10 (Twelve lectures, 21 Jan.–16 Feb.)
- DR M. A. BARRAND AND DR S. B. HLADKY
Aquaporins. Tu. Th. 9 (Two lectures, 3, 7 Feb.)
- DR J. M. EDWARDSON
Control of secretion and receptor trafficking. Tu. Th. 9 (Six lectures, 10 Feb.–1 Mar.)
- PROF. P. P. A. HUMPHREY
Drug discovery. Tu. Th. 9 (Three lectures, 2–9 Mar.)

PHYSIOLOGY

All lectures in the Bryan Matthews Room, Department of Physiology, unless otherwise stated

Timetable Co-ordinator: Dr C. L-H. Huang E-mail: clh11@cus.cam.ac.uk
(Module Organisers are shown below in brackets)

Candidates must attend instruction on experimental procedures from the morning of Thursday 23 September 1999

Common Module. (Dr A. L. R. Findlay)

- Orientation Day** – Wednesday 6 Oct.
Issue of course literature. (9.30 a.m.)
PROF. R. C. THOMAS
Introduction. (One session, 10 a.m.)
- DR J. C. D. HICKSON
Home Office Licence briefing. (One session, 10.30 a.m.)
- MR P. FROST, MRS C. RATCLIFF AND MR T. CARTER
Tour of Part II practical area, Library and Computer work station area. (One session, 11.30 a.m.)
- DR C. L-H. HUANG AND DR S. O. SAGE
Practicals and Projects. (One session, 12.15 p.m.)
- PROF. R. C. THOMAS
Reading a physiological research paper. (One session, 2.15 p.m.)
- DR A. SILVER
Scientific writing. (One session, 3 p.m.)
- DR R. H. S. CARPENTER
Recording and presenting data in figures. (One session, 4.15 p.m.)
- PROF. R. C. THOMAS
Reception. (Tea room 5 p.m.)

SmithKline Beecham Field Trip – Friday 8 Oct.

The coach will leave the main Downing Site entrance on Tennis Court Road at 9 a.m.

Later sessions

- DR J. W. FAWCETT
Research opportunities. Tu. 9 (One session, 9 Nov.)
- DR C. J. SCHWIENING AND DR D. J. TOLHURST
Excel and Statistics. Tu. 10 (One session, 23 Nov.)
- DR A. L. R. FINDLAY
Libraries and information databases. Th. 9 (One session, 25 Nov.)

Common Module. (Dr A. L. R. Findlay)

- Other sessions**
- DR J. W. FAWCETT
Writing up a project and preparing a poster. Th. 11 (One session, 20 Jan.)
- PROF. R. C. THOMAS
What the examiners are looking for. M. 10 (One session, 24 Jan.)
- DR R. H. S. CARPENTER
Experimental design part of Examination Paper 1. M. 10 (One session, 21 Feb.)
- Journal Clubs**
- DR I. M. WINTER
Module 1 Journal Club. M. Th. 4.30 (Two sessions, 27 Jan., 14 Feb.)
- DR R. H. S. CARPENTER
Module 2 Journal Club. M. Tu. 4.30 (Two sessions, 31 Jan., 15 Feb.)
- DR J. C. D. HICKSON
Module 3 Journal Club. Tu. Th. 4.30 (Two sessions, 1 Feb., 17 Feb.)
- DR W. H. COLLEDGE
Module 4 Journal Club. M. Th. 4.30 (Two sessions, 3 Feb., 21 Feb.)
- DR C. J. SCHWIENING
Module 5 Journal Club. M. Tu. 4.30 (Two sessions, 7 Feb., 22 Feb.)
- DR R. J. BARNES
Module 6 Journal Club. Tu. Th. 4.30 (Two sessions, 8 Feb., 24 Feb.)
- DR J. W. FAWCETT
Module 7 Journal Club. M. Th. 4.30 (Two sessions, 10 Feb., 28 Feb.)

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

LENT 2000

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PHYSIOLOGY (continued)

Module 1. Sensory Systems. W. Th. 9 (Dr I. M. Winter)
 PROF. T. D. LAMB
 Photoreceptors. (Six lectures, 13, 14, 20, 21, 27, 28 Oct.)
 PROF. A. C. CRAWFORD
 Peripheral Auditory System. (Four lectures, 3, 10,
 17, 24 Nov.)
 DR D. J. TOLHURST
 The Visual Cortex. (Four lectures, 4, 11, 18 Nov., 1 Dec.)

Module 2. Motor Systems. F. 9, 11 *unless otherwise stated*
 (Dr R. H. S. Carpenter)
 DR C. L-H. HUANG
 Activation of skeletal muscle. Th. 2, F. 9, 11
 (Three lectures, 14, 15 Oct.)
 PROF. A. C. CRAWFORD
 Muscle spindles. F. 9, 11 (Two lectures, 22 Oct.)
 DR R. H. S. CARPENTER
 Motor control systems. F. 9, 11 (Four lectures, 29 Oct.,
 5 Nov.)
 Introduction to eye movements. F. 9, 11 (Two lectures,
 12 Nov.)
 PROF. R. N. LEMON
 Corticospinal organisation. F. 9, 11 (Four lectures
 19, 26 Nov.)

Module 3. Systems Physiology and Transport. M. 9,
 Th. 11 (Dr J. C. D. Hickson)
 PROF. J. T. FITZSIMONS
 Thirst. (Six lectures, 7, 14 Oct., 8, 15, 22, 29 Nov.)
 DR A. V. EDWARDS
 Autonomic neuropeptides. (Four lectures, 11, 18, 25 Oct.,
 1 Nov.)

Module 4. Developmental and Fetal Physiology. Th. F. 12
Unless otherwise stated (Dr W. H. Colledge)
 DR S. K. L. ELLINGTON
 Embryogenesis Th. 9 (7 Oct.); Th. F. 12 (15, 22, 29
 Oct.) (Four lectures)
 DR R. J. BARNES
 Developmental physiology of organ systems.
 (Three lectures, 7, 14, 21 Oct.)
 DR D. A. GIUSSANI
 Fetal control mechanisms. (Two lectures, 4, 11 Nov.)
 DR W. H. COLLEDGE
 Transgenesis. (Four lectures, 5, 12, 19, 26 Nov.)
 DR A. L. FOWDEN
 Fetal development: growth and metabolism.
 (Two lectures, 18, 25 Nov.)

Module 5. Cellular Physiology. M. 10, Tu. 9
 (Dr C. J. Schwiening)
 DR M. MASON
 Measurement of intracellular calcium. (Three lectures,
 11, 12, 26 Oct.)
 DR V. L. LEW
 Energetics of calcium transport. (Three lectures,
 18, 19, 25 Oct.)
 DR M. MAHAUT-SMITH
 Calcium signalling. (Three lectures, 1, 2, 8 Nov.)
 DR H. P. C. ROBINSON
 Synaptic mechanisms. (Four lectures, 15, 16, 22, 23 Nov.)
 PROF. R. C. THOMAS
 Intracellular pH regulation. (Two lectures, 29, 30 Nov.)

Module 1. Sensory Systems. W. Th. 9
 (Dr I. M. Winter)
 DR A. L. R. FINDLAY
 Somatic Sensation. (Four lectures,
 20, 26, 27 Jan., 2 Feb.)
 DR R. D. PATTERSON
 Higher Auditory Processing. (Three lectures,
 3, 10, 16 Feb.)
 DR I. M. WINTER
 Central Auditory Neurophysiology.
 (Five lectures, 9 Feb., 1, 2, 9, 16 Mar.)
 PROF. H. B. BARLOW
 Higher Visual Functions. (Three lectures,
 17, 23, 24 Feb.)

Module 2. Motor Systems. F. 9, 11 *as stated*
 (Dr R. H. S. Carpenter)
 DR R. H. S. CARPENTER
 Neurophysiology of eye movements. F. 9
 (Five lectures, 21, 28 Jan., 4, 11, 18 Feb.)
 DR A. PELAH
 Visuomotor adaptation and control. F. 11
 (Two lectures, 21, 28 Jan.)
 DR H. R. MATTHEWS
 Long-latency Reflexes. F. 11 (Three lectures,
 4, 11, 18 Feb.)
 DR J. C. ROTHWELL
 Cortical and subcortical control of
 movement. F. 9, 11 (Six lectures,
 25 Feb., 3, 10 Mar.)

Module 3. Systems Physiology and Transport.
 M. 9, Th. 11 (Dr J. C. D. Hickson)
 DR S. L. DICKSON
 Details to be announced.
 DR J. C. D. HICKSON
 Gut. (Six lectures, 31 Jan., 3, 7, 21 Feb.,
 6, 9 Mar.)
 DR J. BROWN
 Fluid balance. (Six lectures, 10, 14, 17,
 24, 28 Feb., 2 Mar.)

**Module 4. Developmental and Fetal
 Physiology.** Th. F. 12
 (Dr W. H. Colledge)
 DR R. J. BARNES
 Developmental physiology of organ systems.
 (Three lectures, 20, 27 Jan., 10 Feb.)
 PROF. M. A. H. SURANI
 Developmental biology. (Four lectures,
 21, 28 Jan., 4, 11 Feb.)
 DR D. A. GIUSSANI
 Fetal control mechanisms. (Two lectures,
 3, 25 Feb.)
 DR A. L. FOWDEN
 Fetal development: growth and metabolism.
 (Four lectures, 17, 18, 24 Feb., 2 Mar.)

Module 5. Cellular Physiology. M. 10, Tu. 9
 (Dr C. J. Schwiening)
 PROF. R. C. THOMAS
 Intracellular pH regulation. (Two lectures,
 25, 31 Jan.)
 DR C. J. SCHWIENING
 Neuronal calcium handling. (Three lectures,
 1, 7, 8 Feb.)
 DR J. W. FAWCETT
 Neural development. (Four lectures,
 14, 15, 22, 28 Feb.)
 DR J. H. ROGERS
 Molecular biology of neural development.
 (Five lectures, 29 Feb., 6, 7, 13, 14 Mar.)

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

PHYSIOLOGY (continued)

Module 6. Topics in Clinical Physiology. W. F. 10
In the Biffin Lecture Theatre unless otherwise stated
 (Dr R. J. Barnes)

DR R. J. BARNES
 Introduction, Starling, Guyton and the circulation.
 (Two lectures, 8, 13 Oct.)

DR C. SPEED
 Measuring Human Performance. (One lecture, 15 Oct.)

DR L. SHAPIRO
 The heart and exercise. (One lecture, 20 Oct.)

DR J. JENNER
 Human muscle and human performance. (One lecture,
 22 Oct.)

PROF. J. T. FITZSIMMONS
 Odema, shock and heart failure. (Three lectures,
 27, 29 Oct., 3 Nov.)

DR J. BRADLEY, DR J. FIRTH AND DR K. SMITH
 Aspects of renal disease. (Six lectures,
 5, 10, 12, 17, 19, 24 Nov.)

DR S. J. MIDDLETON
 Gastro-enterology and chest pain. (Two lecturers,
 26 Nov., 1 Dec.)

Module 7. Medical Aspects of Neurobiology. Tu. Th. 10
In the Physiology main lecture theatre
 (Dr J. W. Fawcett)

DR J. MORTON
 Neurodegeneration. (Four lectures, 7, 12, 14, 19 Oct.)

DR J. W. FAWCETT
 Recovery from injury and regeneration. (Three lectures,
 21, 26, 28 Oct.)

PROF. J. PICKARD, MR P. KIRKPATRICK AND DR R. TASKER
 Cerebrospinal fluid, raised intracranial pressure Stroke,
 CNS injury. (Four lectures, 2, 4, 9, 11 Nov.)

DR S. DUNNETT
 Brain Grafting. (Two lectures, 16, 18 Nov.)

DR R. FRANKLIN
 Demyelination and remyelination (Two lectures,
 25, 30 Nov.)

Module 6. Topics in Clinical Physiology.
 W. F. 10 *In the Biffin Lecture Theatre*
unless otherwise stated (Dr R. J. Barnes)

PROF. D. LOMAS AND PROF. E. CHILVERS
 Ventricular failure, pulmonary vascular
 physiology, asthma, bronchitis and
 emphysema. (Five lectures, 21, 26, 28
 Jan., 2, 4 Feb.)

PROF. J. T. FITZSIMMONS
 Hypertension. (Four lectures, 9, 11,
 16, 18 Feb.)

DR M. LOWE
 Electricity and arrhythmias. (Two lectures,
 23, 25 Feb.)

DR M. C. PETCH
 Abnormal haemodynamics, myocardial
 ischaemia and myocardial failure.
 (Three lectures, 1, 3, 8 Mar.)

DR A. ODURO
 Myocardial protection. (Two lectures,
 10, 15 Mar.)

Module 7. Medical Aspects of Neurology.
 Tu. Th. 10 unless otherwise stated
In the Physiology main lecture theatre
 (Dr J. W. Fawcett)

DR I. M. WINTER
 Hearing disorders. (Two lectures, 20, 25 Jan.)

DR D. J. TOLHURST
 Visual disorders. (Three lectures, 27 Jan.,
 1, 3 Feb.)

DR R. BARKER
 Acute and chronic pain. (Two lectures,
 10, 15 Feb.)

DR J. HUNTER
 Development of CNS pharmaceutical
 compounds. (One lecture, 17 Feb.)

DR A. ROBERTS
 Cognitive disorders in neurological disease.
 (Two lectures, 22, 24 Feb.)

DR C. L-H. HUANG
 Neurological imaging F. 12. (Two lectures,
 29 Feb., 3 Mar.)

PROF. I. GOODYER, DR T. HOLLAND AND
 DR P. BOLTON
 Scientific basis and treatment of psychiatric
 disorders. (Four lectures, 2, 7, 9, 14 Mar.)

PLANT SCIENCES

Course co-ordinator: Dr P. J. Grubb E-mail: pjl12@cus.cam.ac.uk

All lectures take place in the Tom ap Rees Lecture Room of the Department of Plant Sciences, unless otherwise stated

DR C. BREARLEY
 Plant growth substances. Tu. Th. 10 (Six lectures,
 14 Oct.–2 Nov.)

DR J. P. CARR
 Molecular plant virology and engineered
 resistance. Tu. Th. 9 (Twelve lectures, 7 Oct.–
 16 Nov.)

DR P. DUPREE
 Intracellular compartments, vesicular traffic and protein
 sorting. Tu. Th. 10 (Six lectures, 11–30 Nov.)

DR A. P. C. BROWN
 Control of gene expression. M. W. F. 12
 (Twelve lectures, 5 Nov.–1 Dec.)

DR P. J. GRUBB AND DR E. V. J. TANNER
 Ecology and ecophysiology of plants. M. W. F. 9
 (Twenty-four lectures, 8 Oct.–1 Dec.)

PROF. R. A. LEIGH AND DR A. A. R. WEBB
 Transport processes in plant cells. M. W. 10
 (Twelve lectures, 11 Oct.–17 Nov.)

PROF. J. S. PARKER
 Plant variation. M. W. 11 (Six lectures, 8–24 Nov.)

DR D. BRIGGS
 Evolution of plants in man-disturbed
 habitats. M. F. 12, W. 2.15
 (Eight lectures, 21 Jan.–7 Feb.)

DR C. A. GILLIGAN
 Botanical epidemiology. M. W. F. 9
 (Twelve lectures, 18 Feb.–15 Mar.)

DR B. J. GLOVER
 The molecular biology and ecology of
 flowering. M. W. 12 (Six lectures,
 21 Feb.–8 Mar.)

DR K. JOHNSTONE
 Molecular plant-microbe interactions.
 M. W. F. 10 (Twelve lectures, 18 Feb.–15
 Mar.)

DR J. M. DAVIES
 Fungal ion transport and nutrition. M. W. F. 9
 (Twelve lectures, 21 Jan.–16 Feb.)

DR O. RACKHAM
 Woodland ecology and history. Th. 12
 (Eight lectures, 20 Jan.–9 Mar.)

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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PLANT SCIENCES (continued)

DR B. GRENFELL, DR W. AMOS, DR P. J. GRUBB, AND
DR E. V. J. TANNER
(Interdepartmental course) Population and community
ecology. M. W. F. 5 (Twenty-four lectures, 8 Oct.–
1 Dec.) *Large Lecture Theatre, Department of Plant
Sciences*

DR B. J. McCABE
(Interdepartmental course) Statistics for Part II
Biologists. M. 9, (4 Oct.); M. Tu. W. Th. F. 2
(4–14 Oct.) (Ten lectures) *Large Lecture Theatre,
Department of Plant Sciences*

DR A. G. SMITH
Molecular biology of plant genomes.
M. W. F. 11 (Twelve lectures, 21 Jan.–16 Feb.)

DR M. A. TESTER
Plant nutrition in environmental
extremes. Tu. Th. 10 (Twelve lectures,
1 Feb.–9 Mar.)

DR J. P. HASELOFF
Plant embryogenesis and meristem
development. Tu. Th. 9 (Six lectures, 18
Jan.–6 Feb.) *Please note the early start of
this course*

PROF. J. B. GURDON, DR D. ST. JOHNSTON,
PROF. C. M. BATE, DR J. P. HASELOFF, AND
DR D. E. HANKE
(Interdepartmental Course) Developmental
biology. M. Tu. F. 5 (Twenty-four
lectures, 21 Jan.–15 Mar.) *Biffen Lecture
Theatre, Department of Genetics*

DR M. BROOKE, DR W. AMOS, DR A. BALMFORD,
DR D. BRIGGS, AND DR E. V. J. TANNER
(Interdepartmental Course) Conservation
biology. M. W. F. 5 (Twenty-four
lectures, 21 Jan.–15 Mar.) *Advanced
Lecture Theatre, Department of Zoology*

PSYCHOLOGY

Course organiser: Dr J. Russell E-mail: j.russell@psychol.cam.ac.uk

Lectures will be held in The Lecture Theatre, Department of Experimental Psychology, unless otherwise stated

General Courses

PROF. N. J. MACKINTOSH
General Introduction. (One lecture only, 7 Oct.)
Physiological Lecture Theatre 3

DR B. P. BRADLEY
Introduction Statistics. M. Tu. W. F. 2 (Four classes
only 6, 8, 11, 12 Oct.) All two hours
Craik Marshall Seminar Room

DR I. P. L. McLAREN
Statistics. M. 2 (Two lectures, 18, 25 Oct.); W. 2
(Three lectures, 13, 20, 27 Oct.); F. 2 (Three lectures,
15, 22, 29 Oct.) *Physiology Lecture Theatre 3*

Examples classes. Tu. 2 (19, 26 Oct.), 2, 9 Nov.)
All two hours *Practical Classroom*

Section A

PROF. B. C. J. MOORE
Hearing. M. 10 (Eight lectures, beginning 11 Oct.);
F. 10 (Eight lectures, beginning 8 Oct.)

PROF. J. D. MOLLON
Vision. W. 10 (Eight lectures, beginning 13 Oct.)

DR M. EIMER
Attention. W. 12 (Eight lectures, beginning 13 Oct.)

Section B

DR I. P. L. McLAREN
Connectionism. F. 11 (Eight lectures, beginning 8 Oct.)

DR I. P. L. McLAREN
Learning, Memory and Cognition. Tu. 10
(Eight lectures, beginning 12 Oct.); W. 11
(Eight lectures beginning 13 Oct.)

DR D. R. J. LAMING
Human Judgment. Th. 10 (Eight lectures, beginning
7 Oct.); Tu. 9 (Eight lectures, beginning 12 Oct.);
Tu. 5 (Supplementary films and one lecture;
eight meetings, beginning 12 Oct.)

General Courses

DR K. L. A. MOGG
Writing a Project Report. M. 5
(One class only, 7 Feb.)

Section A

PROF. J. D. MOLLON
Vision. Th. 10 (Seven lectures, 20, 27 Jan.,
3, 10, 17 Feb., 2, 9 Mar.)

DR P. WHITTLE
New approaches to Perception. W. 12
(Four lectures, 16 Feb., 1, 8, 15 Mar.)

DR M. EIMER
Motor Control. F. 12 (Eight lectures,
21, 28 Jan., 4, 11, 18 Feb., 3, 10, 17 Mar.)

Section B

PROF. L. K. TYLER AND DR. H. E. MOSS
Language, Mind and Brain. Tu. 12
(Eight lectures, 18, 25 Jan., 1, 8, 15, 29
Feb., 7, 14 Mar.); F. 10 (Eight lectures,
21, 28 Jan., 4, 11, 18 Feb., 3, 10, 17 Mar.)

PROF. N. J. MACKINTOSH
Intelligence. Th. 9 (Eight lectures,
20, 27 Jan., 3, 10, 17 Feb., 2, 9, 16 Mar.)
Physiology Lecture Theatre 3

DR D. R. J. LAMING
Human Motivation. Tu. 9 (Eight lectures
18, 25 Jan., 1, 8, 15, 29 Feb., 7, 14 Mar.);
Tu. 5 (Supplementary Films, eight
meetings, 18, 25 Jan., 1, 8, 15, 29 Feb.,
7, 14 Mar.); F. 9 (Eight lectures, 21, 28
Jan., 4, 11, 18 Feb., 3, 10, 17 Mar.)

DR J. DEVLIN
Connectionism 2: Neural Information
Processing. M. 11 (Four lectures,
14, 28 Feb., 6, 13 Mar.)

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NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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PSYCHOLOGY (continued)

Section C

DR A. DICKINSON

Comparative Psychology of Learning and Cognition. M. 12 (Eight lectures, beginning 11 Oct.); F. 12 (Eight lectures, beginning 8 Oct.)

PROF. T. W. ROBBINS AND PROF. B. J. EVERITT

Brain Mechanisms of Motivation. M. 11 (Seven lectures, 11, 18 Oct., 1, 8, 15, 22, 29 Nov.); Tu. 12 (Seven lectures, 12, 19 Oct., 2, 9, 16, 23, 30 Nov.)

Section D

DR J. RUSSELL

Developmental Psychology. F. 9 (Eight lectures, beginning 8 Oct.) *Physiology Lecture Theatre 3*

DR S. BARON-COHEN AND DR B. P. BRADLEY

Abnormal Psychology. Th. 12 (Eight lectures, beginning 7 Oct.) *Physiology Lecture Theatre 3*

DR J. STEVENSON-HINDE AND OTHERS

Developmental Psychology Seminars. W. 5 (Four meetings, 10, 17, 24 Nov., 1 Dec.) *Craik Marshall Seminar Room*

DR K. C. PLAISTED

Developmental Psychology. Th. 2 (Eight lectures, beginning 7 Oct.) *Physiology Lecture Theatre 3*

Section C

PROF. N. J. MACKINTOSH

Comparative Psychology of Learning and Cognition. Th. 12 (Eight lectures, 20, 27 Jan., 3, 10, 17 Feb., 2, 9, 16 Mar.)

PROF. T. W. ROBBINS

Brain Mechanisms of Memory and Cognition. M. 10 (Eight lectures, 17, 24, 31 Jan., 7, 14, 28 Feb., 6, 13 Mar.) *Room 2, Austin Building*

DR R. A. MCCARTHY

Cognitive Neuropsychology. Tu. 10 (Eight lectures, 18, 25 Jan., 1, 8, 15, 29 Feb., 7, 14 Mar.) *Room 2, Austin Building*; W. 10 (Eight lectures, 19, 26 Jan., 2, 9, 16 Feb., 1, 8, 15 Mar.) *Physiology Lecture Theatre 3*

Section D

PROF. B. J. EVERITT AND DR S. BARON-COHEN

Abnormal Psychology. W. 11 (Eight lectures, 19, 26 Jan., 2, 9, 16 Feb., 1, 8, 15 Mar.) *Physiology Lecture Theatre 3*

PROF. R. PLOMIN

Abnormal Psychology Seminars. Th. 5 (Four meetings, 3, 10, 17 Feb., 2 Mar.)

DR J. RUSSELL

Developmental Psychology. F. 11 (Eight lectures, 21, 28 Jan., 4, 11, 18 Feb., 3, 10, 17 Mar.) *Physiology Lecture Theatre 3*

DR J. STEVENSON-HINDE AND OTHERS

Developmental Psychology Seminars. W. 5 (Four meetings, 19, 26 Jan., 2, 9 Feb.)

DR P. WHITTLE

Psychoanalysis. M. 12 (Eight lectures, 17, 24, 31 Jan., 7, 14, 28 Feb., 6, 13 Mar.)

Attention is drawn to lectures on Concepts of Relationships given by Professor R. A. Hinde, W. 11 (10, 17, 24 Nov.); Th. 10 (4, 18, 25 Nov.); F. 11 (5 Nov.) (Eight lectures, beginning 4 Nov.). For venue information, please enquire of the Faculty of Social and Political Sciences.

ZOOLOGY

Course Organiser: Dr J. A. Clack E-mail: j.a.clack@zoo.cam.ac.uk

Lectures will be given in the Department of Zoology, unless otherwise stated

Control of Cell Growth and Genome Stability

DR J. RAFF, DR J. PINES, DR G. EVAN, PROF. M. RAFF, DR F. D'ADDA DI FAGAGNA, DR N. MCCARTHY, DR D. COVERLEY, DR T. KRUDE, DR M. JACKMAN, DR C. FEATHERSTONE AND PROF. S. P. JACKSON (Twenty-four lectures). M. W. F. 9

Module Organiser: Prof. S. P. Jackson

Neural Mechanisms of Behaviour

DR S. LAUGHLIN, PROF. M. BURROWS, DR B. HEDWIG, DR B. McCABE, PROF. E. KEVERNE AND PROF. C. M. BATE (Twenty-four lectures). Tu. Th. S. 11

Module Organiser: Dr S. Laughlin

Topics in Vertebrate Evolution

DR A. E. FRIDAY, DR J. A. CLACK, DR P. BARRETT, DR P. FOREY, DR A. R. MILNER, DR D. B. NORMAN AND DR P. UPCHURCH (Twenty-four lectures). M. W. F. 10

Module Organiser: Dr J. A. Clack

Aquatic Ecology

DR M. BROOKE, DR L. E. FRIDAY, DR D. C. ALDRIDGE, DR R. S. K. BARNES AND DR P. J. HERRING (Twenty-four lectures). M. W. F. 11

Module Organiser: Dr R. S. K. Barnes

Behavioural Ecology

PROF. T. H. CLUTTON-BROCK, PROF. N. B. DAVIES, DR W. A. FOSTER AND DR R. JOHNSTONE (Twenty-four lectures). Tu. Th. S. 11

Module Organiser: Prof. T. H. Clutton-Brock

Mammalian Evolution and Faunal History

DR A. E. FRIDAY, DR R. PREECE AND DR A. J. STUART (Twenty-four lectures). M. W. F. 10

Module Organiser: Dr A. E. Friday

Animal Energetics: the cost of living

DR G. ASKEW, DR R. BOUTILLIER, PROF. A. CLARKE AND DR L. PECK (Twenty-four lectures). Tu. Th. S. 10

Module Organiser: Dr C. P. Ellington

Control of Gene Expression

From 5 Feb. lectures held in the Department of Biochemistry

PROF. R. A. LASKEY, PROF. S. JACKSON, DR K. MEYER, DR M. V. TAYLOR, DR J. MURRAY, DR C. W. J. SMITH AND DR R. JACKSON (Twenty-four lectures). M. W. F. 9

Module Organiser: Prof. R. A. Laskey

Human Biology

Lecturers to be announced (Six lectures). M. W. F. 10
Module Organiser: Prof. T. H. Clutton-Brock

NATURAL SCIENCES TRIPOS, PART II (continued)

MICHAELMAS 1999

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ZOOLOGY (continued)

Behaviour

DR B. J. McCABE, DR K. LALAND, DR G. BROWN,
 PROF. E. B. KEVERNE AND PROF. P. BATESON
 (Twenty-four lectures). Tu. Th. S. 9
 Module Organiser: Prof. E. B. Keverne

Organisation of the Cell

PROF. R. LASKEY, DR M. ROBINSON, DR S. MUNRO,
 DR P. LUZIO, DR M. FREEMAN, DR H. SKAER,
 DR H. BAYLIS, DR S. LAUGHLIN AND DR C. SHARPE
 (Twenty-four lectures). M. W. F. 5
 Module Organiser: Dr C. Sharpe

Population and Community Ecology

All lectures held in the Department of Plant Sciences
 DR P. GRUBB, DR W. AMOS, DR B. T. GRENFELL AND
 DR E. V. J. TANNER
 (Twenty-four lectures). M. W. F. 5
 Module Organiser: Dr B. T. Grenfell

Statistics for Part II and Graduate Biologists

*All lectures held in Large Lecture Theatre, Department of
 Plant Sciences*
 DR B. J. McCABE
 (Ten lectures) 4 Oct. at 9 and 2; 5, 6, 7, 8, 11, 12, 13, 14
 Oct. at 2

Practical work

M. W. 10–12 or 3–5 (4, 6 Oct.); M. W. F. 3–5 (8, 11, 13, 15,
 18 Oct.)
 Module Organiser: Dr B. J. McCabe
 (Note: early start of course)

Developmental Biology

All lectures held in Genetics Department
 PROF. C. M. BATE, PROF. J. GURDON,
 DR A. MARTINEZ ARIAS,
 DR D. ST. JOHNSTON, DR J. AHRINGER AND
 OTHERS
 (Twenty-four lectures). M. Tu. F. 5
 Module Organiser: Prof. C. M. Bate

Conservation Biology

DR M. BROOKE, DR D. BRIGGS, DR W. AMOS,
 DR A. BALMFORD, DR E. V. J. TANNER,
 DR J. O'SULLIVAN AND DR I. D. HODGE
 (Twenty-four lectures). M. W. F. 5
 Module Organiser: Dr A. Balmford

Molecular and Developmental Approaches to Evolution

PROF. M. AKAM, DR N. GOLDMAN, DR W. AMOS
 AND DR D. STERN
 (Twenty-four lectures). M. W. F. 11
 Module Organiser: Prof. M. Akam

NATURAL SCIENCES TRIPOS, PART III

MICHAELMAS 1999

LENT 2000

EASTER 2000

BIOCHEMISTRY

Course Co-ordinator: Dr D. M. Carrington E-mail: biocpt23@mole.bio.cam.ac.uk

Lectures are given in the Department of Biochemistry

Detailed time-tables will be posted in the Department of Biochemistry

Research project support

DR C. W. J. SMITH AND OTHERS

Laboratory safety, experimental design, data management and communication skills. (4–8 Oct.)

DR L. C. PACKMAN AND OTHERS

Research techniques and instrumentation.

(Twelve seminars, from 1 Nov.)

Research project colloquium

DR D. M. CARRINGTON AND DR T. R. HESKETH

(Joint chairs) Presentation of interim reports. Th. 9–5.30 (20 Jan.)

Research project colloquium

DR D. M. CARRINGTON AND DR T. R. HESKETH

(Joint chairs) Presentation of final reports. Th. 9–5.30 (20 Apr.)

Options lectures

1. PROF. G. P. C. SALMOND AND OTHERS
Bacterial virulence and antimicrobial chemotherapy. (Fifteen lectures)
Option Organiser: Prof. G. P. C. Salmond
2. DR A. R. C. RAINE AND OTHERS
Proteins, nucleic acids and their interactions. (Fifteen lectures)
Option Organiser: Dr A. R. C. Raine
3. DR M. D. BRAND AND OTHERS
Bioenergetics. (Fifteen lectures)
Option organiser: Dr M. D. Brand
4. DR P. DUPREE AND OTHERS
Plant molecular biology. (Fifteen lectures)
Option Organiser: Dr P. Dupree
5. DR C. W. J. SMITH AND OTHERS
Control of gene expression in eukaryotes. (Fifteen lectures in part joint with Part II Zoology.)
Option Organisers: Dr C. W. J. Smith and Prof. R. A. Laskey
6. DR J. P. LUZIO AND OTHERS
Medical biochemistry. (Fifteen lectures)
Option Organiser: Dr J. P. Luzio
7. DR J. BLACKBURN AND OTHERS
Enzyme mechanisms and the evolution of enzyme function. (Fifteen lectures)
Option Organiser: Dr J. Blackburn
8. PROF. J. C. METCALFE AND OTHERS
Cardiovascular molecular and cellular biology. (Fifteen lectures)
Option Organisers: Prof. J. C. Metcalfe and Dr A. A. Grace
9. DR T. R. HESKETH AND OTHERS
Oncogenes, tumour suppressor genes and carcinogenesis. (Fifteen lectures in part joint with Option E of Part II Pathology.)
Option Organisers: Dr T. R. Hesketh and Dr N. Affara
10. DR A. M. TOLKOVSKY AND OTHERS
Perspectives in molecular neurobiology (Fifteen lectures)
Option Organiser: Dr A. M. Tolkovsky
11. PROF. C. M. BATE AND OTHERS
Developmental biology (Twenty-four lectures joint with Part II Genetics, Plant Sciences, and Zoology.)
Option Organiser: Prof. C. M. Bate
12. DR D. J. ELLAR AND OTHERS
Biotechnology (Fifteen lectures)
Option Organiser: Dr D. J. Ellar
13. DR D. M. CARRINGTON AND OTHERS
Regulation of the eukaryotic cell cycle (Fifteen lectures)
Option Organiser: Dr D. M. Carrington

Data handling classes

W. 3–5 from 9 Feb.

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

CHEMISTRY

Course co-ordinator: Dr J. Keeler E-mail: James.Keeler@ch.cam.ac.uk

All lectures will be given in the Department of Chemistry, Lensfield Road, unless otherwise stated

Students must register for the course in the *Part IB/III Physical Chemistry Practical Laboratory* between 9 and 1 or 2 and 4 on Tuesday 5th October. A booklet containing details of the times of the lecture courses will be given out on registration. Others interested in the lecture courses can obtain a copy of this booklet on application to the Course Co-ordinator.

All students must attend an introductory talk concerning the course at 10 on Wednesday 6 October in *Lecture Theatre 2*.

EXPERIMENTAL AND THEORETICAL PHYSICS

Lectures are given at the Cavendish Laboratory (West Cambridge), unless otherwise stated

The Year Group Coordinator: Dr B. D. Simons E-mail: III-physics@phy.cam.ac.uk

Students must take courses **L**, **M** and **T**. Course **N** is non-examinable.

Students must offer **three** Major Options from the Michaelmas Term courses, together with **three** Minor Options chosen from the Lent Term courses (or two Minor Options if a Long Vacation Project has been offered). The material of course **L** is examined at the start of the term following that in which each block, Major Options and Minor Options, is given.

The lecture rooms are indicated as follows: (*P*) Pippard Lecture Theatre, (*S*) Small Lecture Theatre, (*M*) Mott Seminar Room, (*R*) Ryle Seminar Room, (*C*) Department of Chemistry.

The course will begin with a meeting on the first Wednesday of Full Term (6 Oct.) at 12.30 in the *Small Lecture Theatre*.

Course L

Major Options

DR W. ALLISON (*P*)

Solid State Physics. Tu. Th. S. 11

PROF. A. M. DONALD (*S*)

Structure and Properties of Condensed Matter.

M. W. F. 9

PROF. A. C. FABIAN, DR M. P. HOBSON AND

PROF. M. J. REES (*P*)

Gravitational Astrophysics and Cosmology.

M. W. F. 12

DR J. R. BATLEY (*P*)

Particle Physics. M. W. F. 11

DR K. F. PRIESTLEY AND DR A. J. HAINES (*S*)

Physics of the Earth as a Planet. Tu. Th. S. 10

DR B. D. SIMONS (*S*)

Theoretical Concepts in Physics. Tu. Th. S. 12

Minor Options

DR C. EWERZ (*P*)

Gauge Field Theory. M. W. 12

DR D. J. C. MACKAY (*P*)

Information Theory, Pattern Recognition and

Neural Networks. Tu. Th. 11

DR R. F. CARSWELL (*S*)

General Relativity. Tu. Th. 9

DR J. A. BLAND (*S*)

Low Dimensional Magnetism and Magnetic

Information Storage Technology.

M. W. 12

DR B. D. SIMONS (*M*)

Phase Transitions and Collective

Phenomena. Tu. Th. 12

DR J. R. COOPER (*M*)

Superconductivity. Tu. Th. 9

PROF. M. PEPPER AND DR C. H. W. BARNES (*S*)

Quantum Effects in Low-dimensional

Semiconductor Devices. M. 11, F. 9

DR D. HASKO (*S*)

Microelectronics and Semiconductor

Materials. M. W. 9

DR N. C. GREENHAM AND DR D. R. RICHARDS (*M*)

Optoelectronics. Tu. Th. 10

PROF. J. E. FIELD AND OTHERS (*S*)

Shock Waves and Explosives. W. F. 11

DR J. MELROSE (*S*)

Polymers and Colloids. Tu. Th. 11

DR A. D. CHALLINOR AND DR C. J. L. DORAN (*S*)

Physical Applications of Geometric

Algebra. M. W. 10

DR C. A. HANIFF (*S*)

The Frontiers of Experimental

Astrophysics. Tu. Th. 10

DR P. P. DENDY AND OTHERS (*M*)

Medical Physics. M. W. 10

DR W. G. REES (*S*)

Physics of Remote Sensing. Tu. Th. 12

DR M. C. PAYNE (*P*)

Quantum Information. W. F. 11

DR P. MONTHOUX AND DR M. SPRUK (*C*)

Numerical Simulation Methods in Physics and

Chemistry. M. W. 2

PROF. J-P. HANSEN AND DR M. WARNER (*C*)

Theory of Complex Fluids. Tu. Th. 2

Except where otherwise indicated, all Part III Mathematics courses are given in *Seminar Room A, DAMTP, Silver Street*

continued >

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

EXPERIMENTAL AND THEORETICAL PHYSICS (continued)

Not more than one of the following courses from Part III Mathematics (p. 141) may be offered for examination

PROF. N. S. MANTON

Quantum Field Theory. Tu. Th. S. 9 *Room 9, Mill Lane Lecture Rooms*

PROF. D. O. GOUGH AND DR C. A. TOUT

Structure and Evolution of Stars. M. W. F. 9

Course M**Course N**

THE STAFF OF THE CAVENDISH LABORATORY (S)

Themes of Cavendish Research. W. 10

DR J. A. C. BLAND AND OTHERS

Cavendish Physical Society seminars. W. 4.30

Course T

DR J. A. C. BLAND AND OTHERS

Project Work

Not more than one of the following courses from Part III Mathematics (p. 141) may be offered for examination. Advanced Quantum Field Theory may not be offered together with Gauge Field Theory.

PROF. P. V. LANDSHOFF

Advanced Quantum Field Theory. M. W. F. 12

DR A. BURGESS AND DR H. E. MASON

Atomic Astrophysics. M. W. F. 9

DR M. WARNER AND OTHERS (P)

Examples Class in General Physics. F. 2-4

PROF. P. LIPTON AND OTHERS (S)

Philosophy of Physics. F. 10

(first four lectures)

DR G. RAJAGOPAL (S)

Modelling with Supercomputers. F. 10

(last four lectures)

THE STAFF OF THE CAVENDISH LABORATORY

Current Research Work in the Cavendish

Laboratory

Open Days for students reading Part II or

Part III Physics. W. 2-5

The Open Days will start with introductory

talks at 2 p.m. in the *Cavendish*

Laboratory

Research in the Rutherford Building (2 Feb. in

Small Lecture Theatre)

Research in the TCM Group (9 Feb. at

2.15 p.m. in *TCM Seminar Room*)

Research in the Mott Building I (16 Feb. in

Small Lecture Theatre)

Research in the Mott Building II (23 Feb. in

Small Lecture Theatre)

DR J. A. C. BLAND AND OTHERS

The same continued

DR J. A. C. BLAND AND OTHERS

The same continued

The same continued. Tu. F. 2-4
(Eight classes)

DR J. A. C. BLAND AND OTHERS

The same continued

DR J. A. C. BLAND AND OTHERS

The same continued

GEOLOGICAL SCIENCES AND MINERAL SCIENCES

Students attend the seminar course in the Michaelmas Term and take three options in the Lent and Easter Term

Seminar Course

A series of up to 16 seminars will be run during the Michaelmas Term. Tu. 5 *Tilley Lecture Theatre*; Th. 12 *Harker Room*

Option 1 Basin Dynamics

DR N. J. WHITE, DR J. A. JACKSON, DR P. F. FRIEND
AND DR R. ENGLAND

Lectures. M. 9, Th. 10 *Tilley Room*

Practicals. M. 10-11.30, Th. 11-12.30

Petrology Laboratory

Convenor: Dr J. A. Jackson

Option 2 Ridges and the Sea Floor

DR M. J. BICKLE, DR M. C. SINHA,

PROF. R. S. WHITE AND DR A. SCHULTZ

Lectures. Tu. 9, F. 2 *Harker Room*

Practicals. Tu. 10-11.30, F. 3-4.30

Petrology Laboratory

Convenor: Dr M. C. Sinha

Option 3 Metamorphic and Igneous Processes

DR T. J. B. HOLLAND, DR M. J. BICKLE,

PROF. D. P. MCKENZIE, DR S. GIBSON

AND DR D. M. PYLE

Lectures. W. F. 9 *Harker Room*

Practicals. W. F. 10-11.30 *Petrology*

Laboratory

Convenor: Dr M. J. Bickle

Options 6-10 and M4-M6 continue for eight
revision sessions each

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 1999

LENT 2000

EASTER 2000

GEOLOGICAL SCIENCES AND MINERAL SCIENCES (continued)

Option M3 Spectroscopic Studies of Minerals

PROF. E. SALJE, DR I. FARNAN, DR A. SHEN,
DR S. A. T. REDFERN AND DR M. T. DOVE
Lectures. W.9, Th. 2 *Harker Room II*
Practicals. W.10-11.30, Th. 3-4.30 *Harker Room II*
Convenor: Dr I. Farnan

Option 4 Basin-fill Architecture and Diagenesis

DR P. F. FRIEND, PROF. I. N. McCAVE AND DR J. A.
D. DICKSON
Lectures. Tu, Th. 2 *Harker Room*
Practicals. Tu, Th. 3-4.30 *Structural*
Laboratory
Convenor: Prof. I. N. McCave

Option 5 Evolutionary Palaeobiology

DR D. B. NORMAN, DR N. J. BUTTERFIELD,
DR P. UPCHURCH AND DR J. DEAN
Lectures. M. F. 2 *Harker Room*
Practicals. M. F. 3-4.30 *Palaeontology*
Laboratory
Convenor: Dr N. J. Butterfield

Option M1 Mineralogy of the Earth and Planetary Deep Interiors

DR A. SHEN, DR S. A. T. REDFERN, DR M. WELCH
AND DR I. FARNAN
Lectures. Tu, 11, W.9 *Oxburgh Room*
Practicals. Tu, 12-1.30, W, 2-3.30
Petrology Laboratory
Convenor: Dr A. Shen

Option M2 Melts, Glasses, Disordered Systems

DR I. FARNAN AND DR A. SHEN
Lectures. Th. 2, F. 11 *Oxburgh Room*
Practicals. Th. 3-4.30, F. 12-1.30 *Oxburgh*
Room
Convenor: Dr I. Farnan

Easter Field Course
16-23 March 2000

MATERIALS SCIENCE AND METALLURGY

Course Co-ordinator: Dr Z. H. Barber E-mail: Part III@msm.cam.ac.uk

Lecture venues to be announced

DR A. L. GREER
C19 Thermal Analysis
DR K. M. KNOWLES
C20 Electron Microscopy and Analysis
DR J. A. LEAKE
C21 X-ray and Neutron Techniques
PROF. C. J. HUMPHREYS
M1 Electrons and Photons in Solids
DR T. W. CLYNE
M2 Solidification and Powder Processing
DR R. V. KUMAR
M3 Extraction and Recycling
DR W. J. CLEGG
M5 High Temperature Materials
DR G. GOLDBECK-WOOD AND PROF. A. H. WINDLE
M6 Polymeric Materials
DR M. G. BLAMIRE
M10 Materials Aspects of Microdevices
DR E. R. WALLACH
M14 Joining
DR P. D. BRISTOWE
M16 Materials Modelling

INDUSTRIAL VISITORS
To be announced

Industrial Visit
All day (2 Dec.)

Practical Classes
M. Tu. W. 2-5 (Two sessions to be chosen per week)

Examples Classes
(Details to be announced)

Management Option
(Details to be announced)

Language Option
Two hours per week: M. 4-6 or Tu. 4-6 or W. 2-4
or Th. 2-4 or Th. 4-6 or F. 2-4

DR I. M. HUTCHINGS
M4 Tribology and Surface Engineering
DR K. M. KNOWLES
M7 Electronics Ceramics
DR J. A. LEAKE AND DR A. L. GREER
M8 Glasses and nanomaterials
PROF. D. J. FRAY
M9 Ionic Materials
DR R. E. CAMERON
M11 Biomaterials
DR Z. H. BARBER
M12 Thin Films
DR B. A. GLOWACKI
M13 Magnetic and Superconducting Materials
DR G. T. BURSTEIN
M15 Corrosion and Protection

INDUSTRIAL VISITORS
To be announced

Industrial Visit
Half day (15 Mar.)

The same continued

Examples Classes
(Details to be announced)

Management Option
(Details to be announced)

Language Option
The same continued

Examples Classes
(Details to be announced)

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